

CITY OF PORTLAND, OREGON
OFFICE OF MANAGEMENT AND FINANCE



***Assessment of Water and Sewer Utility
Customer Information System***

FINAL REPORT OF ASSESSMENT TEAM

December 3, 2001

**Assessment of Water and Sewer Utility
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SUMMARY

Current Situation

- Accounts receivable and cash balances are not yet to financial plan levels
- Although 95 percent of accounts are billing, approximately 8,000 accounts are still not billing
- STS\OV system staff support levels remain at twice the initially predicted level

Assessment Results

- The time and cost to “go back” to the old billing system exceeds other alternatives
- Switching to a different billing system will be a long and expensive process
- The system can likely be made stable to meet minimum business requirements within 15 months
- Beyond achieving stability, the greatest risk is not having a maintenance and support agreement
- Beyond meeting minimum requirements, the system is unlikely to be viable as a long-term solution
- Some progress has been made on audit issues, but work on them remains
- Credit rating issues appear to be manageable if there is continued progress toward system stability

Recommendations

- Water Bureau and BES should continue to conserve financial resources
- Achieve stability to meet minimum business requirements before any other changes are made
- Water Bureau should immediately arrange for long-term system maintenance and support
- Approach any further investments in the STS\OV system only after analysis of options
- Review and alter business practices and operating procedures to ease demands on the STS\OV system
- Immediately review alternatives to the STS\OV system
- Review organizational alternatives for developing, implementing and operating large systems
- Conduct a performance audit of the STS\OV project, once the system has achieved stability

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THE ASSESSMENT PROJECT - What the City Council asked for

In July, 2001, the City Council passed Resolution No. 36009 calling for an independent assessment by Tim Grewe, the City's Chief Administrative Officer (CAO) of the existing Severn Trent Systems (STS) Open Vision (STS\OV) customer information system (CIS) used to bill residential and commercial customers for water and sewer services. The Resolution and accompanying cover memo from the CAO outlined the following tasks for the assessment effort:¹

- Assess the ability of the STS\OV system to meet the needs of the City in both the short and long term;
- Identify options to fix problems, including restarting the previous version of the billing system, and identifying alternative systems to the current system;
- Chart a strategy for next steps to stabilize billings and fix problems;
- Define what is meant by "success" for the system's performance, identify measurement criteria and monitor progress;
- Determine strategies for addressing KMPG² management letter concerns; and
- Determine any bond rating implications and strategies required in light of system performance.

The City Council acknowledged that the Bureau of Water Works (Water Bureau) would need to continue to manage internal efforts to fix the STS\OV system and manage cash flows during the assessment, but also directed that the Water Bureau insure timely responses to the directions of the CAO and the findings and recommendations of the Assessment Team.

While the City Council acknowledged the importance of identifying and understanding lessons learned from the STS\OV implementation effort, that is not within the specific scope of this assessment project.

¹ See Appendix A for the text of the Resolution. Appendix B contains the cover memo from the CAO to the City Council that accompanied the Resolution.

² The City's contracted financial auditor.

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BACKGROUND - Why the City Council asked for this assessment

In 1997 the Water Bureau initiated a process to acquire a modern utility CIS to replace the existing system used to bill residential and commercial customers for water and sewer services that had been in operation since 1983. The decision to replace the existing legacy billing system was driven primarily by the business needs of the Water Bureau and Bureau of Environmental Services (BES) to reengineer and improve customer service related business processes.

The Water Bureau projected that a new system could reduce manual efforts of customer services staff by 40%, and that the cost to bill could be reduced by 90%.³ From today's perspective these expectations seem unrealistic. Additionally, the Water Bureau hoped to position the City to be able to offer billing services to other water agencies in the surrounding geographic area, and finally, it was known that the existing billing system was not Year 2000 compliant, and would require some level of remediation if not replaced.⁴ Rather than invest in the old system, the Water Bureau opted to replace it.

In January, 1998, following a nationwide request for qualifications and bids from firms offering CIS software, the Water Bureau selected the STS\OV system.⁵ The original "go live" date for the STS\OV system was December, 1998.⁶ As with many complex, large scale software implementation projects, the STS\OV project encountered difficulties, and the STS\OV system was eventually put into production in February, 2000.⁷ Because of the delays in implementation, the Water Bureau was forced to make programming changes in its old billing system in order for it to handle dates in the Year 2000 and beyond.⁸

Following the "go live" decision, the Water Bureau continued to experience difficulty with STS\OV system performance. By June, 2000, problems with the new system were causing serious utility financial impacts, including an increase in combined water and sewer accounts receivable from a historically fairly constant level of less than \$15 million⁹ to nearly \$35 million as of June 30, 2000.¹⁰ These difficulties were primarily the result of accounts billing incorrectly or not at all, and lack of automated past due account collections processing.

³ Bureau of Water Works presentation on Business Case for CIS Procurement, September, 1997.

⁴ Bureau of Water Works, Request for Statement of Qualifications to Provide and Implement Customer Information System, August 15, 1997, pages 2-3.

⁵ City Ordinance No. 171957, January 28, 1998.

⁶ STS\OV Implementation Project Manager memorandum to Implementation Team, June 9, 1998.

⁷ Tuesday Update file from original Water Bureau STS\OV Implementation Project Manager's archive, February 22, 2000.

⁸ City Year 2000 Project Status Report, October 1, 1999.

⁹ Official Statements for Water System Revenue Bonds 2000 Series A, and Sewer System Revenue Bonds 2000 Series A.

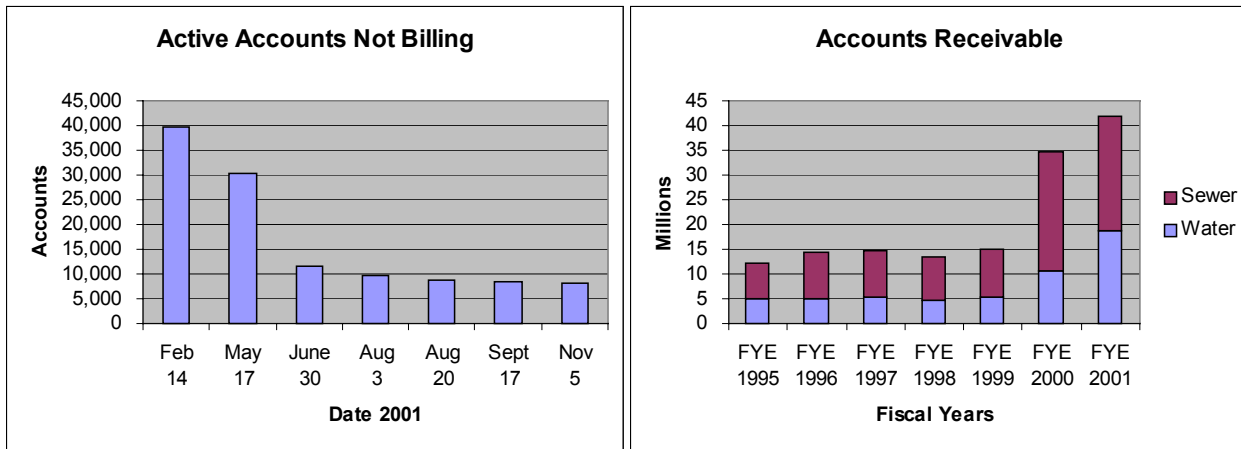
¹⁰ City's Comprehensive Annual Financial Reports, as audited by KPMG, for the fiscal year ended June 30, 2000.

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BACKGROUND (continued)

By February, 2001, a full year after “going live,” approximately 40,000 accounts were still not billing properly. By June, 2001, problem accounts had fallen to less than 12,000 (of a total of over 180,000 active accounts) representing some \$13.7 million in revenue.¹¹ In addition, automated debt recovery was still not functioning,¹² and the City’s unaudited results for the fiscal year ended June 30, 2001, revealed that the water and sewer utilities now had some \$42 million in current outstanding accounts receivable.¹³



In May, 2001, KPMG released a management letter to the City Council raising concerns about the financial impact that problems with the STS\OV system implementation was having on utility operations, and on the City’s overall financial condition.¹⁴ The City Auditor found in October, 2001, that although some progress had been made in addressing these issues, additional work remained.¹⁵

Some level of difficulty with new computerized systems is typical.¹⁶ However, when lingering problems begin to significantly affect critical business functions, particularly cash flow, additional analysis of project direction and options is required. This report responds to the City Council’s request for that level of additional analysis of project direction and options.

¹¹ Bureau of Water Works Report to City Council, July 5, 2001. The Assessment Team has been unable to independently verify the value potentially associated with accounts that are not billing.

¹² Bureau of Water Works Report to City Council, July 5, 2001.

¹³ City’s preliminary and unaudited Trial Balance By Fund for the fiscal year ended June 30, 2001, IBIS Report GL306301, August 25, 2001.

¹⁴ KPMG Management Letter to the City, distributed to the City Council May 14, 2001. See Appendix C.

¹⁵ City Auditor memorandum to City Council, October 22, 2001. See Appendix D.

¹⁶ CIS Cost and Schedule Assessment for the City of Portland Bureau of Water Works, The Wilson Group, March 16, 2000.

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CURRENT SITUATION

At the present time the STS\OV system is regularly billing 95 percent of the City's 180,000 current utility accounts.¹⁷ As part of their audit work for the fiscal year ending June 30, 2001, KPMG, is completing a review of billing accuracy. Their work is expected to be complete around the middle of December, 2001.¹⁸

Additional work remains to clear STS\OV system issues surrounding accounts that are not billing, additional critical functionality is still needed to achieve basic stability (including full automation of debt collection, and implementation of automated pay plan capacity), and additional work remains to fully respond to KPMG management letter concerns. STS\OV system work is currently scheduled and underway.

On November 27, 2001, the Water Bureau provided additional work plan details, testing schedules and estimates for technical work now underway. Because of its receipt near the conclusion of the assessment effort, it is impossible to incorporate the information into the technical analysis to refine the range of probable effort to achieve stability.

The significant progress that has been made in meeting STS\OV system stability, particularly over the last six months, is the result of concerted efforts by both STS personnel and dedicated Water Bureau employees. A change in STS management focus, and the personal and professional commitment by the people involved to bring this project together in a high-pressure and stressful environment has been extraordinary. The Assessment Team acknowledges and honors these efforts.

¹⁷ Based on 8,000 active accounts not billing.

¹⁸ KPMG email memorandum to City Auditor's Office, November 27, 2001.

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THE ASSESSMENT PROCESS

An Assessment Team was assembled by the CAO composed of existing City staff from a number of different bureaus on temporary assignment.¹⁹ Ron Bergman, Interim Director of the Bureau of General services, was designated as Project Manager. The Assessment Team was organized into four primary work groups as requested by Council in order to efficiently address the work:

- *Old CBIS Assessment Work Group* - Led by Steve Fulmer from the Bureau of Information Technology (BIT) and charged with investigating the possibility of reverting to the City's old billing system (or some of its modules) as an interim measure, and if that was found to be a viable option, to understand related limitations and how they could be overcome.
- *System Alternatives Work Group* - Led by Cindy Dietz from the Water Bureau and Debbie Douglas from BIT, charged with making a preliminary investigation of alternatives, including outsourcing or other software options to STS\OV, in the event the CIS consultant found that STS\OV was inadequate as either a short or long-term solution for the City.
- *Finance Work Group* - Led by Dave Gooley from BES and Ken Rust from the Office of Management and Finance (OMF), charged with defining success and stability criteria for the STS\OV system's performance, identifying measurement criteria to gauge success, monitoring utility cash flows, determining strategies for addressing KPMG management letter concerns, and determining any bond rating implications and strategies required by the current situation.
- *STS\OV Assessment Work Group* - Led by Richard Hofland from OMF and charged with specifying the work plan and selection of an independent consultant with expertise in CIS to complete the technical STS\OV system assessment, working with that consultant to ensure the work products produced included adequate information for the City's use, and drafting this final report.

In addition, the Assessment Team created a *Communications Strategy* under the leadership of Ross Walker from the Water Bureau, and Jim Van Dyke from the City Attorney's Office participated regularly during the assessment process to keep the Assessment Team cognizant of potential legal issues that could emerge from their work. The Assessment Team also worked closely with the City Auditor's staff in reviewing Water Bureau progress in response to KPMG management letter recommendations, and with the current review of billing accuracy.

The Assessment Team was assisted by a Technical Advisory Committee (TAC) composed of information technology and customer service system experts from other local organizations and businesses.²⁰ The TAC met regularly and were invaluable in assisting the Assessment Team in formulating the basic questions that needed to be addressed, helping evaluate proposals from consulting teams, reading early drafts of reports, and adding a solid, private business perspective to the work.

¹⁹ See Appendix E.

²⁰ Ibid.

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THE ASSESSMENT PROCESS (continued)

The Assessment Team relied on key consultations with the Commissioners-in-Charge of the Water Bureau (Commissioner Erik Sten) and BES (Commissioner Dan Saltzman). Both Commissioners, along with Mayor Vera Katz, were actively engaged with the assessment effort through weekly meetings with the Project Manager. Commissioner Sten in particular took time to discuss assessment activities, in addition to his efforts toward ensuring that work necessary to resolve remaining STS\OV system issues stayed on track.

Mayor Katz and Commissioners Sten and Saltzman were briefed regularly on the progress of the assessment, and all members of the City Council, TAC and the City's Public Utility Review Board (PURB)²¹ received weekly written status reports on Assessment Team activities.

All activities affecting Water Bureau operations were coordinated with Mort Anoushiravani, the Water Bureau Administrator, who was similarly involved on a regular and in-depth basis. Barney Rabold from the Water Bureau played a key role on the Assessment Team by ensuring that work was coordinated with other Water Bureau activities, including the continuing work on repairs to the STS\OV system, and work in response to the KPMG management letter. The Water Bureau Administrator and The CAO each met regularly with the Assessment Team Project Manager, read early drafts of documents, and contributed their perspectives.

²¹ Ibid.

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ASSESSMENT RESULTS - Can the City go back to the old billing system?

⇒ **The time and cost to do so is equivalent to other alternatives.**

Returning to the previous billing system (CBIS) is an apparent option to continuing struggles with the STS\OV system. CBIS worked reasonably well for almost 20 years until its retirement less than two years ago. Unfortunately, while it is theoretically possible, reviving CBIS would present more challenges and be just as expensive as outsourcing or migrating to a more modern, more flexible commercial alternative.

The option of restoring all or parts of CBIS was examined by the Water Bureau twice during the last year and rejected. The Old CBIS Assessment Work Group reviewed these previous analyses, discussed associated issues, and once again concluded that outsourcing would be a faster and lower risk alternative in the event STS\OV stability is not possible.²²

CBIS is old technology and software, operating in an environment that utilizes some of the oldest surviving programming languages still in use in the IT industry. The fact is that CBIS inadequacies, including the inability to handle two major rate reforms now in place with the STS\OV system, led to the Water Bureau's need to replace it. In addition, the resident CBIS customer data is nearly two years old and does not reflect the details of thousands of customer moves, meter replacements and service orders, plus literally hundreds of thousands of meter readings and payments. Updating the information manually would be a mammoth job, and the ability to merge that data electronically from a couple of hundred data tables in the STS\OV system back to three major sequential files in CBIS would be very difficult to say the least.

A second area of technical issues surround subsidiary systems that operate independently of any billing system, including CBIS or STS\OV, but are crucial to the overall bill generation and receivables process. Some of these systems have now been modified to work with the STS\OV system, and others have been replaced or are new. All would require modification.

Even if these technical difficulties could be overcome, staff would have to be re-trained to use it. Compared to more modern systems (including STS\OV) with pull-down menus and on-line Help screens, CBIS is not intuitive. Most system entry and display is in "code" and requires extensive training for customer services staff to update and interpret. The Water Bureau training standard for customer service staff that was in place prior to implementation of the STS\OV system was three months. Most of the staff with CBIS experience have either moved to other jobs, or are critical leads with the STS\OV project. Achieving this needed level of training presents a number of challenges.

The Work Group also investigated using only parts of CBIS, particularly debt recovery features, as an adjunct to features available within the STS\OV system. However, use of pieces of CBIS would still require maintenance of large portions of the "core" CBIS computer code, and initial and routine updating of most data elements.

²² Re-Use of CBIS, Assessment Team Old CBIS Assessment Work Group, July 23, 2001. See Appendix F.

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ASSESSMENT RESULTS - Can the City go back to the old billing system? (continued)

The Work Group noted that there are also some significant functional issues with the CBIS debt recovery features. There is a “gap” in the CBIS debt recovery module between the last payment postings as it prepares to print reminder notices, and the most recent “real time” payment that may have actually been received on an account. This requires a manual effort to compare the pending notices with the latest payment activity to prevent sending notices to customers who have actually paid. The Work Group concluded that an all-new debt recovery system could be written for less investment in time, effort and money.

Following a discussion of these issues the rest of the Assessment Team and the TAC unanimously concurred that returning to CBIS was not a viable option.

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ASSESSMENT RESULTS - Can the City switch to a different billing system?

⇒ **Yes, but it will be a long and expensive process.**

The System Alternatives Work Group made a preliminary investigation of alternative CIS products and services currently available.²³ The research was focused on identifying what solutions utilities of similar size to the City use, including other software products, outsourcing, and application service providers. A survey was created to normalize responses and help determine a path that may make the most sense for the City to pursue if a new direction is needed. It should be stressed that this research was not an in-depth analysis of alternatives, but a preliminary effort to gather basic, general information about options. In the event a serious pursuit of an alternative to the STS\OV system is required, significantly more work on options will be required.

Staff contacted 16 City-run utilities, nine application service providers (ASPs)²⁴ and 21 CIS software vendors. The results of this preliminary investigation led to several conclusions:

1. City utility billing practices should be reviewed, and changed whenever possible to align with methods available within CIS software or services, rather than tailoring software to fit our practices.
2. Purchase of a different CIS to replace the STS\OV system will be a long and costly process.
3. Moving to an ASP may require only half as long to implement as purchasing a different CIS *if minimal customization is require*, although simplifying business practices may require a complex effort, and require extensive community involvement.

All of the utilities contacted that had converted to a new system noted that it was a very difficult process, and none of them were able to give us a clear picture of the total costs of implementation. Vendors were also unwilling to provide costs at such a preliminary level of inquiry due to the huge variables in needs and environments. Vendors indicated that implementation times of up to 18 months were common, although TMG suggests that a minimum of two years, and realistically three years may be required.²⁵ ASPs indicated implementation times of up to 14 months.

A number of factors emerged that could significantly reduce implementation times, but each has potential customer service implications. For example, moving to a new system without bringing historical data into the new system can shorten implementation times, but eliminates the ability of customer service staff to

²³ City of Portland OMF OV Assessment System Alternatives, Assessment Team System Alternatives Work Group, November 9, 2001. See Appendix G.

²⁴ ASPs typically provide “rentable” software to multiple clients, hosted from a shared data center, and are responsible for maintaining and upgrading the software and the data center. Software may be “industry standard “out of the box,” or customized applications. Vertical Service Providers (VSPs) offer specialized services such as call center operations, bill and/or remittance processing, credit and collections, in addition to ASP services.

²⁵ Review of the Water and Sewer Utility Customer Information System, Final Report Draft, TMG Consulting, November 25, 2001, (TMG Report), page 17. See Appendix H.

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ASSESSMENT RESULTS - Can the City switch to a different billing system? (continued)

“see” historical billing and service history. In addition, the level of flexibility or simplification the City would accept in billing and business practices can make implementation move more quickly.

The Work Group’s investigation indicated that some of Portland’s utility billing *practices* are significantly different and in some cases more complex than most other cities, although the end results sought by cities (including Portland) can be similar. For example, Portland uses a 12-month rolling average in rate calculations, while other cities consider static period use factors. Similarly, Portland can invoke curtailment rates in the event of serious water shortages, while only one other city does this.

Each utility typically has a unique set of billing practices which are addressed by their billing systems. A billing practice may have been developed as a way to deal with situations that are particular to that utility (e.g., special sub-meters to measure cooling/product water discharge). A billing practice may have been developed as a way to deal with a common situation in a unique way (e.g., promoting wise water use through Water Incentive Pricing). Some billing practices are easily handled by existing capabilities within a billing system; other billing practices may require custom software changes. The key point is that although customizing software may be required in some situations, customizing should be avoided whenever possible by changing or eliminating billing practices that do not match the system’s standard process, particularly when policy objectives can still be reasonably achieved.

Seven of the 16 cities surveyed are currently operating on a commercially available CIS product, and the rest use an internally developed solution, although three of the latter originally purchased products that have now undergone major customization and are therefore internally supported. Seven cities said they adjusted their business policies and practices to fit the software, and 13 said they adjusted the system to fit their needs.²⁶ Nine of the 16 cities rate their solution highly.

Of the thirty CIS vendors and ASPs contacted, only ten responded that they have clients with greater than 100,000 customers; four had only one client in that category.

Moving to an ASP appears to provide the quickest opportunity to start accurate billing of more problematic or delinquent accounts. An ASP will have a sense of urgency due to the fact that their revenues are associated with actual billings. If the City is willing to leave billing history behind in the old system and simplify billing and business practices in order to conform to ASP methods, implementation times could be as short as ten months. However, ASPs that have the most experience with large customers indicate a longer timeframe. Full implementation typically can be expected to take from nine to 14 months or longer.

Based on the Work Group’s preliminary research with other cities and CIS vendors, conversion to a replacement CIS solution is likely to take *at least* 18 months. TMG has concluded that the City should expect to spend one year to make a selection, and another two years for implementation.²⁷

²⁶ Some cities made adjustments to fit the software *and* adjusted the system to fit their needs.

²⁷ TMG Report, Appendix H, page 17.

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ASSESSMENT RESULTS - What is “stability” for the City’s billing system?

The Finance Work Group met to define STS\OV system stability criteria, based on existing utility financial planning parameters, agreement on required minimum business functionality, the need to minimize manual intervention with automated systems, and the need for successful interfaces with associated business processes. The Work Group focused on measurable *results* that would indicate stability, rather than relying on specific dates or timeframes to achieve success. Furthermore, meeting the criteria for a least one quarterly billing cycle was also required in order for billing system stability to be achieved.²⁸

The Finance Work Group developed the following stability criteria for the purposes of this assessment. It is expected that some of these criteria could change over time.

STS\OV Stability Criteria	Measure	Minimum
1. Billing and Account Maintenance Correctly handle account maintenance operations (openings, closings, transfers and other modifications), and accurately calculate bills for all customer classes and cycles, regardless of water service status for at least one billing cycle.	Percent of problem accounts	Less than 1%
2. Credit and Collections Correctly initiate and execute automated collection processes for at least one billing cycle.	Percent of past due accounts to automated collection	More than 99%
3. Accounting and Financial Management Correctly allocate payments among accounts and funds for at least one billing cycle.	Percent of allocations correct	More than 99%
4. Cash Flow Maximum Accounts Receivable balance at any time.	AR balance	\$17 million
5. Customer Service Staffing Levels On-going required staffing levels are reasonable.	FTE	49

²⁸ CIS Stability Criteria, Assessment Team Finance Work Group, August 30, 2001.

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ASSESSMENT RESULTS - What is “stability” for the City’s billing system? (continued)

It should be noted that these minimum criteria were developed for purposes of this assessment of the current status of the STS\OV system, and these criteria were not part of STS contract specifications.

The Finance Work Group noted that system stability includes the stability of underlying technical structures such as data table formats. System *results* may be made stable by continuing adjustments to underlying technical structures, but this condition would not be sufficient to meet true system *stability*. The Finance Work Group further recommended that these criteria be maintained if additional evolution of the STS\OV system is undertaken to add or implement functions such as monthly billings for residential customers, storm water discounts, and commercial strength-based sewer rates.²⁹

With regard to staffing levels, the Finance Work Group adopted a definition of stability that would return support levels for the STS\OV system to those required to maintain the old billing system. Initial Water Bureau expectations for a new CIS were that staffing levels should actually decrease with a new system.³⁰ However, from TMG’s perspective it is very common for customer call times to lengthen, and for customer service staffing levels to actually increase. The underlying assumption is that a new system brings new functionality that requires additional staff to operate. At this time, the STS\OV system has not provided functionality beyond that offered by CBIS.³¹ Therefore, the Finance Work Group assumes staffing levels should be comparable to those that existed under CBIS. Another key is that staff be *maintaining* a stable system, and not be *intervening* in system operations to overcome system failures.

It should be noted that the criteria outlined by the Finance Work Group for defining STS\OV *success* (included in the Table, above) is *different* from the list of *features* that TMG has identified that must be made to operate successfully in order to achieve *stability*. All of the *features* identified by TMG must be made to operate, without any hitches, for at least one quarterly billing cycle, and the *results* of these operations must then satisfy the criteria identified by the Finance Work Group for a low number of problem accounts, automated debt collection, revenue allocations between the Water Bureau and BES, cash flow and staffing support levels.

²⁹ Ibid.

³⁰ Bureau of Water Works presentation on Business Case for CIS Procurement, September, 1997.

³¹ TMG Report, Appendix H, page 23.

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ASSESSMENT RESULTS - How is the City doing in achieving STS\OV stability?

⇒ **Better than three months ago, but there is still a ways to go to achieve stability.**

Although the Water Bureau had been monitoring cash flows, the Finance Work Group initiated an additional regimen of weekly monitoring reports for utility performance, including data on stability criteria and daily cash receipts. Information was gathered, plotted in graph form, and distributed weekly to Assessment Team members, the TAC, PURB, senior utility managers, City Council and others.

At its heart a utility CIS must be capable of calculating accurate bills for all classes of customers according to established rate methodologies and tariffs, printing those bills and distributing them to customers, accepting customer payments, crediting the proceeds to the proper accounts, and collecting on past due accounts. Although a CIS typically offers additional features for improved customer focused information, service requests, and issue handling capacity, if the financial component does not function properly, it can seriously effect the financial health of the utilities.

Regular cash flow is critical to the continued operation of the water and sewer utilities, and management of accounts receivable is essential to maintaining utility cash flows. As of November 30, 2001, accounts receivable were \$43.6 million,³² compared to a stability level of \$17 million. Although 95% of all accounts bill now, approximately 8,000³³ active accounts are still not billing at all, and approximately 2,000³⁴ inactive accounts in Final Bill status are not billing. The majority of problem accounts are for single family residential services, although the Water Bureau believes that most of the potential revenue outstanding is from a smaller number of large commercial accounts.³⁵

All parties are focused on doing those things necessary to generate additional cash flow. Activation of the first phases of automated debt recovery has generated over \$2 million in payments since mid-October.³⁶

Water Bureau staff support for the STS\OV system, however, remains over twice the level anticipated after “go live.” Customer service and other support staff for the old billing system replaced by the STS\OV system was approximately 49 full-time equivalents (FTE).³⁷ The Water Bureau initially

³² Unaudited and unadjusted STS\OV system accounts receivable balance.

³³ Bureau of Water Works Report to City Council, November 5, 2001.

³⁴ Bureau of Water Works CIS Report on Accounts With Billing Delays Greater Than 20 days, November 27, 2001. This Report is available on the Water Bureau’s internet site. The Report shows accounts with billing delays that exceed 20 days beyond the normal billing cycle. This Report tracks closely with reported numbers for problem accounts, although the Water Bureau reports only *active* problem accounts to City Council, and apparently uses a different report to generate their numbers, which was not available to the Assessment Team.

³⁵ The Assessment team has been unable to independently verify this.

³⁶ Bureau of Water Works Summary Report of Payments on Accounts for which Debt Recovery Notices Have Been Generated, November 30, 2001.

³⁷ Bureau of Water Works Customer Accounts Group organization chart, February 12, 1996.

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ASSESSMENT RESULTS - How is the City doing in achieving stability? (continued)

projected a 40 percent reduction in manual work within the customer service area,³⁸ although the current expectation and stability criteria calls for a reduction from the current staffing level of 93 FTE³⁹ to 49 FTE.⁴⁰

It should be noted, however, that TMG believes that a new CIS is typically more expensive to operate than the system it replaces. Increases are usually attributable to a more complex system that presents new services such as automated payment plans, as well as more options for customer services staff to use and navigate in answering customer questions. The improved services available with access to more information with which to help customers translates into increased operating costs.⁴¹

It remains unclear what level of staff support will be required for the STS\OV system once it reaches stability. As the system reaches stability (projected over the next 15 months), staffing levels will need to be reassessed. Since the STS\OV system provides functionality closer to CBIS (which it replaced) rather than a full CIS, the expectation should remain, that staffing levels should be lowered to levels similar to those required to support CBIS.

³⁸ Water Bureau presentation on Business Case for CIS Procurement, September, 1997.

³⁹ Bureau of Water Works Customer Services Group organization chart, November 30, 2001.

⁴⁰ CIS Stability Criteria, Assessment Team Finance Work Group, August 30, 2001.

⁴¹ TMG Report, Appendix H, page 23.

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ASSESSMENT RESULTS - Can the STS\OV system be made to meet minimum business requirements?

⇒ It is likely that it can, but there is still a long ways to go to reach stability.

The Assessment Team did not have the specialized expertise to adequately assess the status of the STS\OV system, or to understand its probable viability as a business solution in the broader CIS marketplace. Therefore, a key strategy was to obtain the assistance of an outside consultant with such expertise. Consequently, after significant discussion among the TAC and Assessment Team members, a Request for Proposals (RFP) was finalized and issued in August, 2001.

Thirteen (13) responses to the RFP were received and evaluated, and TMG Consulting of Austin, Texas (TMG) was selected to complete this work.⁴² A final contract with TMG was negotiated and TMG was notified to proceed on October 1, 2001. The RFP identified the consultant's first task as:⁴³

- To identify specific problems remaining with implementation of the STS\OV system inhibiting minimum functionality and system stability, recommend specific actions to resolve those problems, and estimate the time, cost and skills required to complete this work, including associated risks, and
- To prepare and present a technical and tactical assessment and risk analysis of the time, costs and staff skills required to complete implementation of the STS\OV system for the City to meet minimum business requirements.

In their report, TMG identified two specific types of tasks and problems that remain in order for the STS\OV system to be considered stable and meeting minimum business requirements. The first group of tasks concern STS\OV system functions that need to be completed and put into production, and the second group is to resolve issues for accounts that are not billing. TMG estimates that completing all tasks necessary to achieve stability will require somewhere between 24,900 and 30,400 more hours of work over the next year at a cost of \$1.9 to \$2.4 million, including both STS and Water Bureau resources, but that two thirds of this effort is associated with accounts that are not yet billing, and that 85 percent of the effort is the Water Bureau's responsibility.⁴⁴

TMG estimates that all work except "unsticking" remaining accounts that are not billing, can be accomplished by the end of January, 2002. This work includes completing automation of debt recovery, implementing pay plan functionality, water incentive pricing, implementing revenue reporting controls, and finishing repairs to account allocation routines. TMG estimates that finishing work on accounts not billing will likely take through December, 2002.⁴⁵

⁴² City Ordinance No. 175924, September 12, 2001.

⁴³ Request for Proposals for an independent assessment of the City's water and sewer utility customer information system, August 13, 2001 (RFP).

⁴⁴ TMG Report, Appendix H, pages 32 and 42.

⁴⁵ Ibid.

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ASSESSMENT RESULTS - Can the STS\OV system be made stable? (continued)

It should be noted that the Water Bureau has considerable staff resources already devoted to this work, so this does not necessarily mean that these are costs above current levels of effort.

TMG tables from their report are as follows:⁴⁶

Stabilize System	STS Only					
	Low Hours	Mid Hours	High Hours	Low Dollars	Mid Dollars	High Dollars
Debt Recovery Shutoffs	637	708	779	\$ 111,510	\$ 123,900	\$ 136,290
Payment Plans	351	390	429	\$ 61,425	\$ 68,250	\$ 75,075
Water Incentive Pricing	345	383	421	\$ 60,323	\$ 67,025	\$ 73,728
Fund Allocation / Accounting	439	488	537	\$ 76,860	\$ 85,400	\$ 93,940
Revenue Reporting Controls	459	510	561	\$ 80,325	\$ 89,250	\$ 98,175
Accounts Not Billing	1,728	1,920	2,112	\$ 302,400	\$ 336,000	\$ 369,600
Totals	3,959	4,399	4,839	\$ 692,843	\$ 769,825	\$ 846,808
Totals Rounded	4,000	4,400	4,800	\$ 693,000	\$ 770,000	\$ 847,000

Stabilize System	City Only					
	Low Hours	Mid Hours	High Hours	Low Dollars	Mid Dollars	High Dollars
Debt Recovery Shutoffs	719	799	879	\$ 55,538	\$ 61,709	\$ 67,880
Payment Plans	397	441	485	\$ 30,695	\$ 34,105	\$ 37,516
Water Incentive Pricing	389	432	475	\$ 30,020	\$ 33,356	\$ 36,692
20% Sewer Credit	3,667	4,074	4,481	\$ 216,855	\$ 240,950	\$ 265,045
Fund Allocation / Accounting	495	550	605	\$ 38,198	\$ 42,442	\$ 46,686
Revenue Reporting Controls	518	576	634	\$ 40,063	\$ 44,514	\$ 48,965
Accounts Not Billing	14,760	16,400	18,040	\$ 841,320	\$ 934,800	\$ 1,028,280
Totals	20,945	23,272	25,599	\$ 1,252,688	\$ 1,391,876	\$ 1,531,064
Totals Rounded	20,900	23,300	25,600	\$ 1,253,000	\$ 1,392,000	\$ 1,531,000

Stabilize System	Totals					
	Low Hours	Mid Hours	High Hours	Low Dollars	Mid Dollars	High Dollars
Debt Recovery Shutoffs	1,356	1,507	1,658	\$ 167,048	\$ 185,609	\$ 204,170
Payment Plans	748	831	914	\$ 92,120	\$ 102,355	\$ 112,591
Water Incentive Pricing	734	815	897	\$ 90,343	\$ 100,381	\$ 110,419
20% Sewer Credit	3,667	4,074	4,481	\$ 216,855	\$ 240,950	\$ 265,045
Fund Allocation / Accounting	934	1,038	1,142	\$ 115,058	\$ 127,842	\$ 140,626
Revenue Reporting Controls	977	1,086	1,195	\$ 120,388	\$ 133,764	\$ 147,140
Accounts Not Billing	16,488	18,320	20,152	\$ 1,143,720	\$ 1,270,800	\$ 1,397,880
Totals	24,904	27,671	30,438	\$ 1,945,531	\$ 2,161,701	\$ 2,377,871
Totals Rounded	24,900	27,700	30,400	\$ 1,946,000	\$ 2,162,000	\$ 2,378,000

⁴⁶ TMG Report, Appendix H, page 32.

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ASSESSMENT RESULTS - What does the City have to do to keep the STS\OV system stable?

⇒ Arrange for long-term system maintenance and support.

STS support continues to be crucial in resolving remaining STS\OV issues to achieve stability, and for longer term maintenance and support. For the City, the area of greatest risk surrounding the STS\OV system at this time (assuming stability is achieved) is lack of any longer term computer software code maintenance and support agreement. It is essential that this situation be addressed immediately.

The City does not have access to STS\OV computer source code and there is no agreement in place or under negotiation to allow City access to the code, although the License Agreement provides for a process to place the source code in escrow as long as the City pays the maintenance fee for the software.⁴⁷

According to the Water Bureau, STS is willing to enter into a maintenance agreement, although no such agreement is being actively negotiated, and the terms of any escrow and the conditions under which the code could be released to the City have never been negotiated. In a typical situation, software customers (such as the City) would either have the source code, or a maintenance contract with a vendor. Without the source code only STS can effectively provide routine maintenance of the fundamental CIS software the City now relies on for billing and managing utility customers. Since the annual utility cash flow is in excess of \$200 million and represents nearly 24% of the City's total annual cash flow,⁴⁸ it is imperative that the City maintain a robust relationship with a critical business partner such as STS.

The City should immediately identify an STS\OV system maintenance strategy. A direct maintenance agreement with STS should include provisions for City access to computer code in the event STS elects to no longer maintain the code under any such agreement. Absent STS and the City reaching an agreement for STS maintenance, the City must obtain access to the code so that alternative support arrangements can be made with another support vendor.

There are also support issues beyond maintenance of STS\OV computer code. The STS\OV system currently relies on other systems for such crucial activities as bill printing *outside* the STS\OV structure. The bill printing routine was written by the Water Bureau, containing over 500,000 lines of code, to achieve this function in a way that more closely matched existing practices.⁴⁹ Such "add-ons" or "work arounds" can produce "scar tissue" and interface issues that exacerbate maintenance difficulties. The City must be prepared to dedicate sufficient resources to maintain the code the Water Bureau has written.

⁴⁷ License Agreement between the City and STS, February 7, 1998, Article 11.

⁴⁸ City's Comprehensive Annual Financial Reports, as audited by KPMG, for the fiscal years ended June 30, 1999, and June 30, 2000.

⁴⁹ The STS/OV system as delivered did not include any means of bill printing developed. Instead, STS simply provided a commodity package which the City could have used for that purpose. The City decided to use a different package than STS originally specified.

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ASSESSMENT RESULTS - Can the STS\OV system ever function as originally expected?

⇒ **Basic business functionality is expected to be achieved in the near-term; long-term viability as a full-function CIS is unlikely.**

The RFP identified the consultant’s second task as:⁵⁰

- To assess the probability that the STS\OV system will meet requirements of the City as identified in contract specifications, and if so at what cost and in what period of time, and with what probable level of continuing staff and financial support, and
- To prepare and present a strategic analysis of the STS\OV system’s long-term viability in meeting the business needs of the City.

In their Report, TMG identified a number of functions, specific issues and problems that remain in order for the STS\OV system to operate at an acceptable level with all of the features of an industry-standard CIS. TMG estimates that stability will require somewhere between 27,000 and 33,000 more hours of work over the next two years at a cost of \$2.9 to \$3.6 million, including both STS and Water Bureau resources.⁵¹

Finish System	STS Only					
	Low Hours	Mid Hours	High Hours	Low Dollars	Mid Dollars	High Dollars
Other Change Control	2,160	2,400	2,640	\$ 378,000	\$ 420,000	\$ 462,000
Master Account/Subs	495	550	605	\$ 86,625	\$ 96,250	\$ 105,875
Bill Production	455	505	556	\$ 79,538	\$ 88,375	\$ 97,213
Mass Changes	313	348	383	\$ 54,810	\$ 60,900	\$ 66,990
Ready Billing	189	210	231	\$ 33,075	\$ 36,750	\$ 40,425
Enhance Validation & Estimation	216	240	264	\$ 37,800	\$ 42,000	\$ 46,200
On-line bill calc and gen	216	240	264	\$ 37,800	\$ 42,000	\$ 46,200
Cancel/rebill for current & prior	450	500	550	\$ 78,750	\$ 87,500	\$ 96,250
Reporting	990	1,100	1,210	\$ 173,250	\$ 192,500	\$ 211,750
Bill Messaging Group & Individual	113	125	138	\$ 19,688	\$ 21,875	\$ 24,063
Customer Communication Paths.	810	900	990	\$ 141,750	\$ 157,500	\$ 173,250
User defined fields	315	350	385	\$ 55,125	\$ 61,250	\$ 67,375
Flexible Config Without Coder	1,643	1,825	2,008	\$ 287,438	\$ 319,375	\$ 351,313
Customer Correspondence	439	488	537	\$ 76,860	\$ 85,400	\$ 93,940
ACH Bank Processing	140	155	171	\$ 24,413	\$ 27,125	\$ 29,838
Mass change	392	435	479	\$ 68,513	\$ 76,125	\$ 83,738
Refund processing	282	313	344	\$ 49,298	\$ 54,775	\$ 60,253
Intelligent Customer Handler	-	-	-	\$ -	\$ -	\$ -
Deposit Processing	-	-	-	\$ -	\$ -	\$ -
Customer Contracts	-	-	-	\$ -	\$ -	\$ -
Meter Read Route - Rerouting	-	-	-	\$ -	\$ -	\$ -
Customer Contact	63	70	77	\$ 11,025	\$ 12,250	\$ 13,475
Meter Exchange	-	-	-	\$ -	\$ -	\$ -
Miscellaneous Bill	-	-	-	\$ -	\$ -	\$ -
Personal Work Queue	-	-	-	\$ -	\$ -	\$ -
Totals	9,679	10,754	11,829	\$ 1,693,755	\$ 1,881,950	\$ 2,070,145
Totals Rounded	10,000	11,000	12,000	\$ 1,700,000	\$ 1,900,000	\$ 2,100,000

⁵⁰ RFP.

⁵¹ TMG Report, Appendix H, pages 35-37 and 42.

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ASSESSMENT RESULTS - Can the STS\OV system ever function as originally expected? (continued)

Finish System	City Only					
	Low Hours	Mid Hours	High Hours	Low Dollars	Mid Dollars	High Dollars
Other Change Control	2,440	2,711	2,982	\$ 188,457	\$ 209,397	\$ 230,337
Master Account/Subs	559	621	683	\$ 43,115	\$ 47,905	\$ 52,696
Bill Production	514	571	628	\$ 39,700	\$ 44,111	\$ 48,522
Mass Changes	353	392	431	\$ 27,225	\$ 30,250	\$ 33,275
Ready Billing	214	238	262	\$ 16,564	\$ 18,404	\$ 20,244
Enhance Validation & Estimation	244	271	298	\$ 18,788	\$ 20,875	\$ 22,963
On-line bill calc and gen	244	271	298	\$ 18,788	\$ 20,875	\$ 22,963
Cancel/rebill for current & prior Reporting	509	565	622	\$ 39,286	\$ 43,651	\$ 48,016
Reporting	535	594	653	\$ 46,827	\$ 52,030	\$ 57,233
Bill Messaging Group & Individual	61	68	75	\$ 5,400	\$ 6,000	\$ 6,600
Customer Communication Paths.	437	486	535	\$ 38,313	\$ 42,570	\$ 46,827
User defined fields	170	189	208	\$ 14,900	\$ 16,555	\$ 18,211
Flexible Config Without Coder	1,855	2,061	2,267	\$ 143,218	\$ 159,131	\$ 175,044
Customer Correspondence	237	263	289	\$ 20,714	\$ 23,015	\$ 25,317
ACH Bank Processing	158	175	193	\$ 12,164	\$ 13,515	\$ 14,867
Mass change	442	491	540	\$ 34,109	\$ 37,899	\$ 41,689
Refund processing	319	354	389	\$ 24,638	\$ 27,376	\$ 30,114
Intelligent Customer Handler	1,901	2,112	2,323	\$ 128,736	\$ 143,040	\$ 157,344
Deposit Processing	2,851	3,168	3,485	\$ 193,104	\$ 214,560	\$ 236,016
Customer Contracts	950	1,056	1,162	\$ 64,368	\$ 71,520	\$ 78,672
Meter Read Route - Rerouting	158	176	194	\$ 10,728	\$ 11,920	\$ 13,112
Customer Contact	72	80	88	\$ 5,591	\$ 6,212	\$ 6,833
Meter Exchange	158	176	194	\$ 10,728	\$ 11,920	\$ 13,112
Miscellaneous Bill	1,267	1,408	1,549	\$ 85,824	\$ 95,360	\$ 104,896
Personal Work Queue	317	352	387	\$ 21,456	\$ 23,840	\$ 26,224
Totals	16,964	18,849	20,734	\$ 1,252,738	\$ 1,391,931	\$ 1,531,124
Totals Rounded	17,000	19,000	21,000	\$ 1,300,000	\$ 1,400,000	\$ 1,500,000

Finish System	Totals					
	Low Hours	Mid Hours	High Hours	Low Dollars	Mid Dollars	High Dollars
Other Change Control	4,600	5,111	5,622	\$ 566,457	\$ 629,397	\$ 692,337
Master Account/Subs	1,054	1,171	1,288	\$ 129,740	\$ 144,155	\$ 158,571
Bill Production	968	1,076	1,184	\$ 119,237	\$ 132,486	\$ 145,735
Mass Changes	666	740	814	\$ 82,035	\$ 91,150	\$ 100,265
Ready Billing	403	448	493	\$ 49,639	\$ 55,154	\$ 60,669
Enhance Validation & Estimation	460	511	562	\$ 56,588	\$ 62,875	\$ 69,163
On-line bill calc and gen	460	511	562	\$ 56,588	\$ 62,875	\$ 69,163
Cancel/rebill for current & prior Reporting	959	1,065	1,172	\$ 118,036	\$ 131,151	\$ 144,266
Reporting	1,525	1,694	1,863	\$ 220,077	\$ 244,530	\$ 268,983
Bill Messaging Group & Individual	174	193	212	\$ 25,088	\$ 27,875	\$ 30,663
Customer Communication Paths.	1,247	1,386	1,525	\$ 180,063	\$ 200,070	\$ 220,077
User defined fields	485	539	593	\$ 70,025	\$ 77,805	\$ 85,586
Flexible Config Without Coder	3,497	3,886	4,275	\$ 430,655	\$ 478,506	\$ 526,357
Customer Correspondence	676	751	826	\$ 97,574	\$ 108,415	\$ 119,257
ACH Bank Processing	297	330	363	\$ 36,576	\$ 40,640	\$ 44,704
Mass change	833	926	1,019	\$ 102,622	\$ 114,024	\$ 125,426
Refund processing	600	667	734	\$ 73,936	\$ 82,151	\$ 90,366
Intelligent Customer Handler	1,901	2,112	2,323	\$ 128,736	\$ 143,040	\$ 157,344
Deposit Processing	2,851	3,168	3,485	\$ 193,104	\$ 214,560	\$ 236,016
Customer Contracts	950	1,056	1,162	\$ 64,368	\$ 71,520	\$ 78,672
Meter Read Route - Rerouting	158	176	194	\$ 10,728	\$ 11,920	\$ 13,112
Customer Contact	135	150	165	\$ 16,616	\$ 18,462	\$ 20,308
Meter Exchange	158	176	194	\$ 10,728	\$ 11,920	\$ 13,112
Miscellaneous Bill	1,267	1,408	1,549	\$ 85,824	\$ 95,360	\$ 104,896
Personal Work Queue	317	352	387	\$ 21,456	\$ 23,840	\$ 26,224
Totals	26,643	29,603	32,563	\$ 2,946,493	\$ 3,273,881	\$ 3,601,269
Totals Rounded	27,000	30,000	33,000	\$ 2,900,000	\$ 3,300,000	\$ 3,600,000

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ASSESSMENT RESULTS - Can the STS\OV system ever function as originally expected? (continued)

Again, it should be noted that the Water Bureau has considerable staff resources already devoted to this work, so this does not necessarily mean that these are hours or costs above current levels of effort extended over the next two years.

TMG cautioned the City, however, about making significant further investments in the STS\OV system. According to TMG the STS\OV system is not viable in the long-term as a product that the City can expect to be significantly enhanced and evolved over time to support the City and its growing and changing business needs. From an industry perspective TMG made the following observations:⁵²

- STS has not submitted an STS\OV system proposal to several recent CIS procurements.
- There is no other successful STS\OV implementation of any substance within the U.S. market.
- There are a number of STS\OV customers who are not proceeding with STS\OV implementation efforts.

TMG believes that these and similar observations contribute to a lack of market viability for the STS\OV system. Instead of the City owning a healthy, growing product which is evolving in the market, it owns a CIS solution which has stagnated through lack of sales. Normal evolution of software products recognizes the synergy of participation among a broad customer base. In this case, the ability of STS\OV to satisfy evolving CIS business requirements of the City will be limited by the amount of money the City can invest, on its own, to enhance the system. Ultimately, the City's desire to offer additional features or services to its customers will be a driving force to replace the STS\OV system.⁵³

⁵² Ibid, page 13.

⁵³ Ibid, pages 16.

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ASSESSMENT RESULTS - How is the City doing in responding to the Auditor's concerns?

⇒ **Progress has been made, but not all issues are fully resolved.**

In May, 2001, KPMG released a management letter to the City Council raising concerns about the financial impact that lingering problems with the STS\OV system implementation was having on the utility operations, and on the City's overall financial condition. The management letter detailed six internal control deficiencies related to the STS\OV system and made recommendations for corrective action. The management letter also included the Water Bureau's response to the recommendations, and discussed actions taken or planned to be taken to address the deficiencies.⁵⁴

Separately, and in conjunction with OMF's STS\OV assessment effort, the City Auditor began a follow up review of the Water Bureau's actions in response to the management letter, releasing a summary of those actions to date in October, 2001.⁵⁵

A summary of the issues and their status are as follows.

- *Security over direct manual alteration of customer account data*

KPMG found that, where the STS\OV system does not provide a process for correcting customer account data, manual correction was accomplished by altering customer data directly in the data tables, outside of the STS\OV system. Six individuals had full access to all STS\OV customer billing files and data during the year. KPMG recommended that access to customer billing data and files be restricted. The Bureau responded by assigning new passwords and user ids. The City Auditor noted that while new passwords and user ids had been issued, the former password and user id had not been rendered inoperable. Some 14 individuals still had knowledge of the old password and user id. In addition, the Bureau still lacked a method of detecting and reporting direct alteration of customer billing files. Also, STS\OV database controls to detect and report such alterations were not activated because they degraded system performance. The Bureau took immediate action to render the old password and user id inoperable, and indicated that an alternative method of detecting and logging direct changes to selected STS\OV database tables and fields would be implemented by October 31, 2001. This latest action has not yet been verified.

⁵⁴ KPMG Management Letter to the City, distributed to the City Council May 14, 2001. See Appendix C.

⁵⁵ City Auditor memorandum to City Council, October 22, 2001. See Appendix D.

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ASSESSMENT RESULTS - How is the City doing in responding to the Auditor's concerns? (continued)

- *Backup of OV Production Tables and Data*

KPMG reported that the STS\OV system operates in “real time” which makes daily back up of customer data and files critical. However, they found the Water Bureau had not implemented daily backups that necessitated additional audit work and cost to verify year end accounts receivable balances. They also found the Water Bureau had not developed and implemented backup and restore procedures or policies and recommended that this be done. The Water Bureau indicated that daily back ups were started the first week in March, 2001, and that new policies and procedures would be completed before June 30. The City Auditor found that the Water Bureau had implemented several backup methods. However, it was not until July and August, 2001, that backup procedures and a policy were finally adopted. The City Auditor recommended that conflicting and confusing terms and requirements between these two documents be eliminated.

KPMG also recommended that the Water Bureau develop restore time goals and test frequency to ensure that the system can be restored to full operation within a Water Bureau-designated time frame. The City Auditor found that the Water Bureau had not established restore time goals or a test frequency. Lack of computer resources precluded a restore test by the City Auditor; however, the Water Bureau felt that a restore test was less critical because the STS\OV database tables and transactions are “mirrored” in real time on a separate computer. The City Auditor recommended that the Water Bureau include system restoration goals and restore test frequency in its new back up policy and procedures.

- *Unbilled Accounts at Year-end*

KPMG found the Water Bureau could not produce a detailed list of accounts receivable at June 30, 2000. This constituted a significant deficiency in the design and operation of internal control and represented a “reportable condition” included in the City’s Single Audit report. In addition, KPMG found over 11,000 unbilled accounts that required considerable audit work to calculate and record the related revenue. The City Auditor found the Water Bureau had taken adequate steps to ensure copies of customer data were made at June 30, 2001. The Bureau also prepared and recorded estimated revenues for 11,479 unbilled accounts at June 30, 2001. However, this estimate may be under or over stated because the Bureau used billing averages from two year old CBIS data rather than current rates and usage, revenues were calculated for accounts with no billable meter reads, and an addition error understated BES revenue and receivables by over \$750,000.

As part of their audit for the fiscal year ended June 30, 2001, KPMG is completing a review of billing accuracy. Their work is expected to be complete around the middle of December, 2001.⁵⁶

⁵⁶ KPMG email memorandum to City Auditor’s Office, November 27, 2001.

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ASSESSMENT RESULTS - How is the City doing in responding to the Auditor's concerns? (continued)

- *Complete and accurate bill processing*

KPMG found that STS\OV system controls to flag billing errors were unreliable and recommended that the Water Bureau obtain an understanding of these controls and establish parameters that meet their business needs. The Water Bureau responded by establishing a new "bill audit" process designed to account for all bills processed through a bill cycle. The City Auditor found the "bill audit" process was not completely effective in accounting for all bills. During the City Auditor's review, the Water Bureau took some steps to facilitate reconciliation of bill counts and indicated it would develop procedures to more fully account for all printed bills.

- *Billing error resolution*

KPMG found that controls were not in place to ensure that system-related billing errors were reported and tracked through resolution and recommended that the Water Bureau maintain one comprehensive database of customer billing problems and issues. The Water Bureau responded that the STS\OV system has a "suspend billing" feature for flagging accounts with billing problems and that a separate, external personal computer database is used to track all identified system-related issues. The City Auditor found there was no link between an account in "suspended" status in the STS\OV system and the issues noted in the external database. Therefore, there is no assurance that all system-related suspensions are also included in the external database. The Water Bureau indicated they rely on the STS\OV system implementation Project Team to ensure all system problems are included in the database.

- *Project assessment and control*

KPMG noted that the Water Bureau needed to provide better communications and controls over the STS\OV system implementation project and implement tools and "best practices" for resolving project implementation issues. The Water Bureau indicated that they had divided the project into "technical issues" and "backlog work" which were being managed using personal computer project management and spreadsheet software. The City Auditor found that critical items in the spreadsheet are now being tracked, that one person is responsible for updating the files, and that the Water Bureau is adequately controlling all facets of the project – including critical issues.

Complete copies of KPMG's management letter and the City Auditors report are included as Appendices C and D to this report.

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ASSESSMENT RESULTS - Do billing system problems affect City credit ratings?

⇒ **Potentially, but they appear to be manageable if there is continued progress toward system stability.**

As part of its assessment work, the Finance Work Group drafted recommendations on a bond credit rating strategy for the Water Bureau and BES.⁵⁷ The strategy focused on steps the City should take to protect and preserve existing credit ratings. Credit ratings do not currently appear to be in jeopardy due to any inherent (or proposed) legal structures or security pledges for bonds, or due to actual water or sewer service characteristics. Credit rating elements that may be in question involve utility financial performance due to STS\OV system difficulties, and City management's ability to resolve those problems.

Credit rating concerns are significant because both the Water Bureau and BES need to access the capital markets during the next 12 months in order to continue their capital improvement programs. The Water Bureau is scheduled to be in the bond market for approximately \$25 million as early as the spring of 2002, and BES is scheduled to be in the market in the fall of 2002 for a planned \$160 million borrowing. Capital markets will require a solid record of improvement in the City's utility financial performance, or a definitive, believable plan and schedule for achieving financial stability. Lacking one or the other, the City faces the potential that utility revenue bond ratings may fall, with a resulting increase in interest charges and cost of borrowing. This is not an insignificant factor. A reduction of one rating category translates into a tenth of a percent increase in the interest rate, which would increase the cost of borrowing \$185 million over 20 years by \$2.5 million.

Although total billings have increased and the outstanding accounts receivable balance appears to have peaked, current financial performance is not yet sufficiently reliable to support any long-term borrowing by the Water Bureau at this time. For these reasons, the Finance Work Group is recommending that the Water Bureau pursue a short-term borrowing backed in part by a pledge of the General Fund to meet its near term capital needs. The short-term borrowing would be redeemed by a long-term Water Bureau borrowing executed during the summer of 2002 when it is expected that more definitive information regarding billing system performance will be available. It is hoped that this strategy will enable the billing system financial related issues to be resolved or managed in a manner that avoids a credit rating downgrade. Similarly, at this time it is assumed that BES will be able to enter the capital markets in late fall of 2002, and that no credit rating downgrade will result.

The success of the credit rating strategy developed by the Finance Work Group is predicated on continued success in improving billing system performance and achieving billing system stability. To compensate for STS\OV performance history, the Finance Work Group recommended that specific commitments be made to rating agencies to meet minimum financial targets, including completion of this independent assessment, completion of key elements of the STS\OV system's functionality, and specific actions for both the Water Bureau and BES (included within the Recommendations section of this Report). If these actions do not occur, the strategy as outlined may prove unable to avoid a downgrade in the City's water and sewer revenue bond credit ratings.

⁵⁷ Recommendation on Credit Rating Strategy, Assessment Team Finance Work Group, August 20, 2001. See Appendix I.

**Assessment of Water and Sewer Utility
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OTHER ISSUES

Two issues emerged from the Assessment Team's work that require mention, even though investigation of them was not part of the Assessment Team's assignment from City Council.

- *Operating and Financial Policy Changes*

Discussions with other organizations clearly indicated that each utility has a unique set of billing practices which are addressed by their billing systems. A billing practice may have been developed as a way to deal with situations that are particular to that utility (e.g., special sub-meters to measure cooling or product water discharge). A billing practice may have been developed as a way to deal with a common situation in a unique way (e.g., promoting wise water use through Water Incentive Pricing). Some billing practices are easily handled by existing capabilities within a billing system; other billing practices may require custom software changes. The key point is that although customizing software may be required in some situations, customizing should be avoided whenever possible by changing or eliminating billing practices that do not match the system's standard process, particularly when policy objectives can still be reasonably achieved.

Currently, City Code 17.30.136 provides for penalty-free extended payment plans and a 20 percent credit for the portion of a sewer bill that is delayed by more than six months. Such discounts and penalty-free terms, no matter how appealing, just, or reasonable they may be for the individual customer, cause significant financial issues for the utilities, and raise questions of customer equity. It is important that the City Council (and the public) recognize that offering interest free payment terms or discounts to one customer simply penalizes other customers who will be forced to endure higher rates to cover the losses incurred in granting such discount terms.

The Assessment Team has therefore included recommendations suggesting a review of utility operating and business procedures to determine if current practices can be simplified, and specific recommendations on sunseting of the penalty-free payment plans and the 20 percent sewer credit for future bills.⁵⁸

- *Organizational Considerations*

The Assessment Team discussed a number of organizational challenges that the STS\OV system implementation has faced, and continues to face. There are competing interests in any such large-scale project, and how well those interests are balanced can determine the success of the project from those various points of view. In this case the City has a project with enormous customer service, financial, business practice and information technology implications spanning two major bureaus that comprise almost a quarter of the City's entire annual cash flow. How a project of this magnitude should be managed, or how such a system should be operated and maintained, is an area ripe for discussion, but beyond the scope of this assessment effort.

⁵⁸ See Appendix J for a complete discussion of interest free payment plans and the 20 percent sewer credit.

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OTHER ISSUES (continued)

- *Organizational Considerations (continued)*

The Assessment Team believes, however, that this discussion should be conducted, but that it should occur in the context of a broader strategic vision for the City. For example, there are issues of potential regional water supply or utility operations, a City Budget Note asking OMF to investigate a Revenue Bureau, a recent change in City-wide IT organization, recent Council preference to use the utility billing system to collect other types of fees (such as the Street Maintenance and Improvement Fee), the still evolving relationship of the Integrated Regional Network Enterprise (IRNE) project to core City business practices, and the long-standing latent desire to “do something” about the City’s core financial system (IBIS).

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ASSESSMENT TEAM RECOMMENDATIONS

The Assessment Team spent many hours poring over documents, discussing strategies and options among themselves and with outside advisors. Our advisors included a Technical Advisory Committee (TAC) composed of top IT managers from large businesses in the metropolitan area, plus the leader of the “salvage” team on the State of Oregon’s Department of Motor Vehicles system. We also had the assistance of a nationally known consulting firm specializing in CIS, and asked them to do a large job in a short period of time. The following recommendations were endorsed unanimously by all of these groups.

1. Continue to conserve Water Bureau resources by directing the Water Bureau to adopt specific quick, low risk actions

- *Maintain a minimum Operating Fund balance* of not less than \$5 million but build cash back to financial plan levels as quickly as possible.⁵⁹
- *Increase cash flows* to financial plan levels through improved collections efforts or operational efficiencies.
- *Review all capital projects* for deferral until the STS\OV system stabilizes and cash flows improve to financial plan levels, but maintain capital efforts at a level that enables staff and indirect costs to be fully capitalized and funded from the Construction Fund.⁶⁰
- *Eliminate penalty-free payment plan options.*⁶¹
- *Identify other business or policy changes* required to simplify meeting minimum business requirements and prepare a work plan and cost estimate for discussion by the City Council in conjunction with budget discussions during the spring of 2002.
- *Be prepared to reduce expenditures further*, up to and including staff layoffs, including reductions required due to any shift in costs from the Construction Fund to the Operating Fund, to maintain the Operating Fund balance of at least \$5 million.
- *Be prepared to impose an interim and temporary rate increase* if the above actions are insufficient to maintain a minimum balance in the Operating Fund of at least \$5 million.

⁵⁹ Bureau of Water Works Ten Year Financial Plan, July, 1999. Given the nature of the operation, the Water Bureau’s current “Aa1” bond rating, and the historic stability of revenue, current policy is to maintain an Operating Fund balance equal to approximately 45 to 60 days of ongoing day to day expenditures, including General Fund Overhead and Utility License Fees. This currently translates into approximately \$8.5 million. Lowering the minimum to \$5 million is acceptable but is a professional judgement call in which OMF concurs.

⁶⁰ Critical to this action is the ability for the Water Bureau to borrow additional construction capital in the early spring of 2002. If this is not possible, then additional costs now paid from the Construction Fund may shift to the Operating Fund.

⁶¹ Water Bureau penalty-free payment plans are *not* the same as the 20% credit and penalty-free payment options currently available for delayed *sewer* billings.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

2. Continue to conserve BES resources by directing BES to adopt specific quick, low risk actions

- *Maintain Operating Fund balance* of not less than the current financial planning policy level of 10 percent of operating expenses.⁶²
- *Slow operating and capital expenditures* as much as possible until the STS\OV system stabilizes and cash flows improve to financial plan levels.
- *Sunset the 20 percent sewer credit* and the policy that allows customers to pay past due balances over a two-year period penalty-free if sewer bills that are delayed six (6) months or longer for any future billing issues *for future bills*.⁶³
- *Identify other business or policy changes* required to simplify meeting minimum business requirements and prepare a work plan and cost estimate for discussion by the City Council in conjunction with budget discussions during the spring on 2002.
- *Be prepared to impose an interim and temporary rate increase*, or a temporary surcharge above the rate increase that occurred July 1, 2001, if the above actions are insufficient to maintain the Operating Fund balance at financial plan levels.

3. Achieve stability with the STS\OV system to meet minimum business requirements before any other changes are made to the system

As noted earlier, the criteria outlined by the Finance Work Group for defining STS\OV *success* is *different* from the list of *features* that TMG has identified that must be made to operate successfully in order to achieve *stability*. All of the *features* identified by TMG must be made to operate, without any hitches, and the *results* of these operations must then satisfy the criteria identified by the Finance Work Group for a low number of problem accounts, automated debt collection, revenue allocations between the Water Bureau and BES, cash flow and staffing support levels.

The Assessment Team recognizes that there may be additional functionality that is important for the City to have from a utility billing system, including such things as monthly billings for residential customers and storm drain discounts. But the Assessment Team recommends that implementation of such features be distinguished from work that is absolutely essential to achieve basic, stable utility cash flow functionality within the STS\OV system. Once stability has been achieved, additional functionality can be considered, but even then, changes should be undertaken only after careful analysis of the best approach.

⁶² Bureau of Environmental Services Financial Policies and Practices, November 27, 2001. Current policy is to maintain an Operating Fund balance equal to \$4.5 million, or nine percent of the current year's projected operating expenses (plus one percent in the Rate Stabilization Fund), whichever is greater. This currently translates into \$6.4 million.

⁶³ Customers who may be eligible for the 20 percent sewer credit and penalty-free payment terms (based on prior late bills) should continue to receive these terms on their late bills to date.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

3. Achieve stability with the STS\OV system (continued)

TMG believes that the City, working with STS, can provide minimum business functionality with the STS\OV system to ensure an uninterrupted revenue stream by the end of January, 2002, including completing implementation of automated debt recovery, payment plans, and Water Incentive Pricing.⁶⁴ The Assessment Team cannot predict when the STS\OV system will satisfy the *stability* criteria identified by the Finance Work Group.

The Assessment Team recommends that the City Council should:

- *Affirm* that minimum business requirements include only the following
 - 99% of all accounts are billing accurately within their scheduled billing cycle
 - Accurate debt recovery reminder notices are being sent according to policy guidelines
 - 99% of past due accounts are managed and tracked by STS\OV or collection agency
 - Cash receipts track with adopted financial plans for water and sewer utilities
 - Accounts receivable do not exceed \$17 million at any time⁶⁵
 - Allocation of revenues between water and sewer utilities is accurate 99% of the time
 - There is security over direct manual alteration of customer account data
 - STS\OV production tables and data is backed up daily, and archived for key audit dates
 - STS\OV support staffing benchmark level should remain at 49 full-time equivalents, until the Water Bureau documents permanent staffing required following system stability
- *Recognize* that minimum business requirements do not include the following features
 - Monthly billing for residential customers
 - Storm Drain discounts
 - Electronic payment processing
 - Customer access to account information via the internet
 - New functionality or billing services not already included in this Assessment Team Report

⁶⁴ TMG Report, Appendix H, page 42.

⁶⁵ A “normal” level of accounts receivable may change over time as rates and other factors change.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

3. Achieve stability with the STS\OV system (continued)

- *Direct the Water Bureau* to do the following:
 - ❑ Do not begin work on any STS\OV system changes not necessary to meet minimum business requirements, including upgrades to newer versions of the STS\OV system
 - ❑ Within 45 days, prepare “Plan B” actions for minimum business functions not in production, including pay plans, water incentive pricing and service shut offs.
 - ❑ Review accounts for application of the 20% sewer credit and apply as a manual adjustment
 - ❑ Continue to follow-up on large past due accounts.
 - ❑ Document permanent STS\OV system staffing required following system stability
 - ❑ Refine and translate TMG level of effort and schedule estimates for achieving stability into work plans and cost estimates for discussion by the City Council in conjunction with budget discussions during the spring on 2002.
 - ❑ Identify any additional work necessary to meet minimum business requirements and prepare work plans and cost estimates for discussion by the City Council in conjunction with budget discussions during the spring on 2002.
 - ❑ Prepare or revise work plans and schedules to balance available resources and track progress within very narrow windows for completing steps necessary to achieve minimum business requirements, including trigger dates for moving to “Plan B” actions.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

4. Arrange for on-going STS\OV maintenance and support

TMG believes that it is imperative for the City to immediately engage STS in discussions to understand and agree on a maintenance program for the STS\OV system. According to the Water Bureau, STS is willing to enter into a support agreement, but if it is determined for any reason that STS will not provide maintenance, TMG recommends that the City should secure access to the computer code and outsource the entire hardware, software and STS\OV system to a third party to support the application.⁶⁶ If access to the computer code is not available, TMG recommends that the City immediately launch an effort to replace the STS\OV system with a billing service.

Assuming that STS\OV stability can be achieved, *lack of maintenance and support arrangements for the STS\OV system represents the area of most significant risk to the City at this time.*

The Assessment Team recommends that the City Council should:

- *Direct the Water Bureau* to do the following:
 - With BES, OMF and City Attorney participation, identify STS\OV system support and maintenance options and strategies for City Council consideration within 90 days.
 - Refine and translate TMG level of effort and schedule estimates for system maintenance⁶⁷ into work plans and cost estimates for discussion by the City Council in conjunction with budget discussions during the spring on 2002.
 - Identify maintenance requirements for supporting computer code developed by the City in support of the STS\OV system and prepare work plans and cost estimates for discussion by the City Council in conjunction with budget discussions during the spring on 2002.
 - Identify upgrades or additions to hardware, operating environment software and associated licenses that should be undertaken to effectively and efficiently operate the STS\OV system for the next three years and prepare work plans and cost estimates for discussion by the City Council in conjunction with budget discussions during the spring on 2002.

⁶⁶ TMG Report, Appendix H, page 16.

⁶⁷ TMG refers to system maintenance as “enhancements” over time.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

5. Approach further investments in the STS\OV system with care

TMG believes that some additional functions, such as monthly billings for residential customers, may be possible within the STS/OV system.⁶⁸ However there may be many system implications such as database size, call center loads, postage costs, billing review costs, meter reading costs and up-loads that could severely impact the capacity of the Water Bureau. Likewise, storm water discounts may also be possible, subject to testing within STS/OV. Customer internet access to account information and consumption data may not be available within STS/OV, but may be possible through add-on software or data extracts and a separate server.

The Water Bureau has also considered upgrading the STS\OV system software to version 4.0, and changes to operating hardware and software, such as the Oracle database. TMG has specifically recommended against upgrading to STS\OV version 4.0 unless STS delivers a “critical item” with it,⁶⁹ but has noted that much of the hardware and software used to support the STS\OV system was purchased in the early days of the project and is in need of upgrade or replacement. TMG noted that delay in making such upgrades may be short-sighted, since the City will be relying on the STS\OV system for at least four years even if a decision was reached to replace it immediately.⁷⁰

The Assessment Team recommends that the City Council should direct the Water Bureau to:

- *Make no changes* to the STS\OV system (beyond those required to achieve minimum business requirements) until the system has run in a stable condition for at least one quarterly billing cycle and a maintenance and support agreement (with STS or another vendor) is in place
- *Make decisions about adding billing system capabilities, or upgrading hardware or software, including STS\OV versions, only after City Council discussion of options, benefits, associated risks, timing, detailed work plans and costs associated with the change for providing that functionality, either within the STS\OV system, as add-on functions, or as completely separate efforts.*
- *Maintain STS\OV system stability* through all phases of any changes in functionality.

⁶⁸ TMG email memorandum to Assessment Team, November 9, 2001.

⁶⁹ TMG Report, Appendix H, page 16.

⁷⁰ Ibid, page 22.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

6. Review Water Bureau and BES operating and business procedures

The City Council should direct the Water Bureau and BES to:

- *Prepare a report* to the Council within six months that outlines current operating and business practices that can be simplified in the interest of easing demands on the STS\OV system.

The report should include but not be limited to TMG suggestions for such actions. Any item suggested by TMG that cannot be implemented should either identify options for achieving the same goal, or offer a reasoned opinion about why the action should not be taken. For any recommended options, the report should identify risks and benefits, and include detailed work plans, costs and proposed schedules for implementation.

TMG offered a number of specific changes the City should consider, including:⁷¹

- Utilize the STS\OV functionality and supporting data model as it was designed, particularly utilization of a single account associated with a *customer*, rather than a service address.
- Produce Final Bills for customers based on the day of termination for advance notifications, or the day of notification to the Water Bureau; eliminate backdated terminations to a day the customer states they terminated the service.
- Schedule bill printing routines so they do not conflict with on-line system response times.
- Begin collecting account deposits for high-risk customers.
- Investigate and recommend appropriate changes in complicated rate structures that are causing accounts to fail to bill.
- Implement seasonal rates within the STS\OV system, which could result in similar water conservation rates, but not require a custom solution for the current Water Bureau Water Incentive Pricing structure.
- Improve the process for conducting and recording the results of a meter exchange to eliminate the current nine-day window between meter reading and billing when an exchange is required.
- Investigate outsourcing the application technology components to a company specializing in application hosting agreements
- Review staff roles and responsibilities in light of operating procedure changes.
- Develop and actively support an on-going staff training and education programs.

⁷¹ TMG Report, Appendix H, page 23.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

7. Expand the review of alternatives to the STS\OV system, including organizational options for development, operation and evolution of similar systems in the future, and eventual operation and maintenance of the STS\OV system

Because of the risk factor that lack of an ongoing maintenance and support agreement presents to the City, the potential lack of longer-term viability of the STS\OV system in the CIS market, and the possibility that resolving support issues (including access to computer source code) may become part of larger discussions between the City and STS, the City should be prepared to launch a selection process for a replacement system once stability is achieved.

The Assessment Team discussed a number of organizational challenges that the STS\OV system implementation has faced, and continues to face. TMG noted that business operations (including call center, billing and remittance processing) are frequently managed in municipal operations by the finance organization.⁷² Only two of the 16 cities surveyed by the System Alternatives Work Group were organized in this fashion. TMG also observed that central IT operations typically assume responsibility for operating enterprise or mission critical systems such as a CIS.⁷³

There are competing interests between finance, customer services and information technology in any such large-scale project, and how well those interests are balanced can determine the success of the project from those various points of view. In the case of the STS\OV system the City has a project with enormous customer service, financial, business practice and information technology implications spanning two major bureaus that comprise almost a quarter of the City's entire annual cash flow. How a project of this magnitude should be designed and managed, or how such a system should be operated and maintained, is an area ripe for discussion, but was beyond the scope of this assessment effort.

Because of these factors, the City Council should:

- *Direct OMF*, through the CAO, with participation of other stakeholders, to complete an expanded investigation within one year of alternatives to the STS\OV system.

This analysis should be completed in the context of a broader strategic vision for the City, including discussions surrounding regional water supply or utility operations, the City Budget Note concerning a Revenue Bureau, recent City Council preference to use the utility billing system to collect other types of fees (such as the Street Maintenance and Improvement Fee), the still evolving relationship of the IRNE project to core City business practices, and the long-standing latent desire to "do something" about the City's core financial system (IBIS). This analysis should also include organizational alternatives for development, operation and maintenance of large City mission critical systems, including the STS\OV system *after it has achieved stability for at least one quarterly billing cycle*, in the context of such broader strategic visions.

⁷² TMG Report, Appendix H, page 14.

⁷³ Ibid.

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ASSESSMENT TEAM RECOMMENDATIONS (continued)

8. Identify and understand lessons learned from the STS\OV implementation effort

At the time it directed this assessment work, the City Council recognized the importance of understanding whether different approaches to the STS\OV system acquisition and implementation could have avoided some or all of the difficulties encountered. Although not part of our work, the Assessment Team concurs that this is essential, particularly since the City is currently engaged in other large-scale information technology projects, and others are probable in the foreseeable future, including finding a new CIS strategy. The Assessment Team recommends that the City Council should:

- *Ask the City Auditor to conduct a performance audit* of the procedures used by the Water Bureau to acquire and implement the STS\OV system. The audit should commence after the STS\OV system is stable, and should compare Water Bureau procedures to industry standards for large system acquisition and implementation.

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CONCLUSIONS

Current Situation

1. Accounts receivable and cash balances are not yet to financial plan levels
 - Water and BES accounts receivable have historically been constant at about \$15 million
 - As of June 30, 2001, unaudited accounts receivable were \$42 million
 - On November 30, 2001, unadjusted and unaudited accounts receivable were \$43.6 million
 - Activation of the first phases of automated debt recovery has generated over \$2 million in payments just since mid-October
2. The STS\OV system is regularly billing 95 percent of the City's 180,000 utility accounts
 - About 8,000 active accounts are still not billing
 - In addition, approximately 2,000 inactive accounts in Final Bill status are not billing
 - As part of their audit work, KPMG is completing a review of billing reliability
3. STS\OV system staff support levels remain at almost twice the historical levels required to support the old system
 - Initial expectations were that support staff would decrease
 - It was unrealistic to expect support levels to drop with a new, more complex system
 - Until new STS\OV functionality comes on-line, a return to support levels required by old the system remains the target
 - Future support levels cannot be determined until the system is stable, and appropriate levels can be analyzed and justified by the Water Bureau
4. Additional work remains to attain minimum business requirements and STS\OV system stability
 - Accounts that are not billing
 - Additional critical functionality is still needed to achieve basic stability
 - Response to KPMG management letter concerns
 - Progress has been made, particularly over the last six months

Assessment Results

1. The time and cost to "go back" to the old billing system is equivalent to other alternatives
 - Update of customer files from STS\OV system would be a significant technical challenge
 - Subsidiary systems modified to work with STS\OV system would have to be "unmodified"
 - Staff training would be required
 - Using only parts of the old system presents the same challenges
 - Better alternatives are available for the same time and effort

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CONCLUSIONS (continued)

Assessment Results (continued)

2. Switching to a different billing system will be a long and expensive process
 - Purchasing and implementing a different CIS would likely take 3 years
 - Vendors state that switching to an ASP could take 10 to 14 months or longer, after selection
 - A switch to an ASP would require changes to services and business practices
 - In the meantime, we still have to bill customers
 - Cost of new system or ASP arrangements are difficult to estimate, but will be expensive
3. The system can likely be made stable to meet minimum business requirements within 15 months
 - STS remains crucial to resolving remaining issues to achieve functional stability
 - Completing remaining minimum functional issues will take through January, 2002
 - Clean-up on accounts not billing will take another year
 - TMG believes that full system functional stability can be expected by around January, 2003
 - To be considered stable by City criteria the STS\OV system must then run well for at least three months
4. Beyond achieving stability, the greatest risk is not having a maintenance and support agreement
 - The City does not have a maintenance agreement for the STS\OV system
 - The City does not have the source code either, necessary to support the system internally
 - A support strategy for subsidiary system code must be formalized
 - Hardware and operating environment software upgrades are expected
 - Operating environment licensing must be maintained
5. Beyond meeting minimum requirements, the system is unlikely to be viable as a long-term solution
 - The STS\OV system is not being actively marketed
 - There is no other successful implementation of substance in the U.S.
 - A number of STS\OV customers are not proceeding with implementation efforts
 - Lack of broader market viability means normal upgrades will be the City's exclusive responsibility
6. Some progress has been made on audit issues, but work on them remains
7. Credit rating issues appear to be manageable if there is continued progress toward system stability

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CONCLUSIONS (continued)

Recommendations

1. The Water Bureau should continue to conserve financial resources
 - Maintain operating fund balance at financial planning levels if possible
 - Maintain operating fund balance of not less than \$5 million under any conditions
 - Increase cash flows to financial plan levels through improved collections efforts or operational efficiencies
 - Review capital projects for deferral
 - Eliminate penalty-free payment plan options
 - Identify business or policy changes to simplify meeting minimum requirements
 - Be prepared to reduce expenditures further to maintain operating fund balances
 - Be prepared to impose interim rate increases to maintain operating fund balances if the above actions are not sufficient

 2. BES should continue to conserve financial resources
 - Maintain operating fund balance at financial planning level
 - Slow operating and capital expenditures as much as possible
 - Sunset 20 percent sewer credit and penalty-free payment plan options for future bills
 - Identify business or policy changes to simplify meeting minimum requirements
 - Be prepared to impose interim rate increases to maintain operating fund balances if the above actions are not sufficient

 3. Achieve stability to meet minimum business requirements before any other changes are made
 - City Council should affirm what constitutes minimum business requirements
 - City Council should recognize that minimum requirements may not include desired functionality
 - Water Bureau should not begin work on any functions not part of minimum requirements until stability is achieved
 - Water Bureau should refine and translate TMG estimates of level of effort into budgets
 - Water Bureau should identify any additional work necessary to meet minimum requirements
 - Water Bureau should prepare or revise work plans to complete all work necessary to achieve minimum business requirements

 4. Water Bureau should immediately arrange for long-term system maintenance and support
 - Identify support options for City Council consideration within 90 days
 - Refine and translate TMG estimates of level of effort into budgets
 - Identify maintenance requirements for supporting subsidiary system code
 - Identify upgrades or additions to hardware, operating environment software and licenses
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CONCLUSIONS (continued)

Recommendations (continued)

5. Water Bureau should make further investments in the STS\OV system only after analysis of options
 - Make no changes to the STS\OV system until it is running stable
 - Make decisions about changes only after City Council discussion of options
 - Maintain STS\OV system stability through all phases of changes approved by City Council
6. The Water Bureau and BES should review business practices and operating procedures for options to ease demands on the STS\OV system and prepare a report to City Council on options within six months
7. OMF should expand the review of alternatives to the STS\OV system, including organizational options, in the context of a broader strategic vision for the City and report to the City Council within one year.
8. The City Auditor should conduct a performance audit of the procedures used by the Water Bureau to acquire and implement the STS\OV system, after system has achieved stability.