CITY AUDITOR'S OFFICE

# Citywide Audit Risk Assessment Model

**AUGUST 10, 2012** **REPORT NO. 1216**

**CITY COUNCIL**
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August 10, 2012

Honorable Mayor and Members of the City Council:

Development of a Citywide Risk Assessment Model was included in the FY 2011/12 Audit Plan. While refinement of this model will continue over time, this report describes its development and current state.

The City Auditor's Office has long used a risk assessment evaluation for developing the annual audit plan, but this model makes that process more systematic and automated. As well, a systematic process for allocating audit resources can increase the transparency of audit planning. Once the model has been populated with financial and operational data from the past two fiscal years and with FY 2012/13 budget data, it will be first used in developing the FY 2013/14 annual audit plan.

If you need additional information or have any questions, please contact me at (480) 312-7867.

Sincerely,

Sharron Walker

Sharron Walker, CPA, CFE
City Auditor

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# EXECUTIVE SUMMARY

A Citywide Risk Assessment Model was included on the Council-approved FY 2011/12 Audit Plan. As it was not completed by June 2012, this project was carried forward to the approved FY 2012/13 Audit Plan.

Because there are not unlimited audit resources, potential audits must be evaluated and prioritized so that valuable resources are allocated appropriately. To facilitate annual audit planning, this prioritization is often based on a risk assessment process. A formal risk assessment methodology provides a rational basis for prioritization and enhances transparency of the process.

While the City Auditor's Office has long used a risk assessment evaluation for annual audit planning, the process has been manual and time consuming. This model incorporates more risk elements and facilitates more automated data collection and processing. The existing model has been informed by reviewing existing best practices and standards as well as the City's budget and other sources of financial and operational data.

This report describes the current Citywide Audit Risk Assessment model, which will continue to be refined over time. For example, the elements of risk currently include a comparative assessment of the size of an activity or function; complexity of the activity, transactions, processes or supporting information technology; time since last audit; and other factors. However, refining the model, such as adding elements for management assessments of risk and developing some of the rating factors for which data sources are not now available, will continue. Also, as new audits are performed and their results incorporated into the ratings, the model will become more reliable through more current information.

This Audit Risk Assessment model will be populated with financial and operational data for the two to three most recent fiscal years and first used as a basis for developing the FY 2013/14 Audit Plan.

## BACKGROUND

Every organization, regardless of size, structure, nature or industry, faces a variety of risks from internal and external sources. Risk, which is defined as the probability that an event or action may have adverse effect, can impair an organization's ability to maintain its financial strength, positive public image, and overall quality of products, services and people.

Management of the organization is fundamentally responsible for establishing and maintaining effective controls to offset risks so that appropriate goals and objectives are met; laws and regulations are followed; and management and financial information is reliable and properly reported. However, internal controls cannot ensure achievement of goals; instead, they provide management information regarding progress – or lack of progress – toward them.

To effectively allocate audit resources and make appropriate recommendations for improvements, auditors identify risk exposures relating to their organization's governance, operations and information systems and assess related controls. While the Scottsdale City Auditor's Office has long used a risk assessment analysis for developing the annual audit plan, the process has been manual and time consuming. This Audit Risk Assessment model encompasses more formal elements than previously used and allows more automated and consistent processing. A systematic assessment methodology can be used to deconstruct risk into its component elements and then assess them quantitatively to arrive at a total risk score. In addition, the formal methodology can also enhance the transparency of audit prioritization.

The preliminary Audit Risk Assessment model has been developed drawing on professional best practices, judgment and experience as well as models used by other local government auditors. The Model will continue to be refined over time through discussions with City management in the specific activity areas and development of data sources that are not currently available.

## OBJECTIVES, SCOPE, AND METHODOLOGY

To improve efficiency of existing ad hoc risk assessment analysis, the FY 2011/12 Annual Audit Plan included development of a Citywide Risk Assessment Model. This model, which is being designed to encompass more risk elements than previously used and allow more automated and consistent processing, will primarily center on the major activities or functions of City operations. These activities or functions generally align with identified "service areas" and are tracked in one or more cost centers in the City's accounting and budget systems.

Risk is traditionally viewed as having inherent risk and residual risk characteristics. *Inherent* risk means the potential for loss based on the nature of the activity or transaction without any mitigating controls. For example, cash is inherently a more risky asset than a building as cash is more susceptible to theft or loss. *Residual,* or *control,* risk relates to the design and effectiveness of management controls put in place to offset inherent risks. As an example, the level of risk remaining after supervisory review of voided cash receipts may vary depending on the timing and effectiveness of that review.

Risk factors are influenced by an organization's economic, industry, regulatory or operating conditions and changes in those conditions. Further, identifying an organization's exposure to potential risks and estimating the likelihood of adverse effects that may occur derive from both the organization-wide and the activity-level objectives. Such objectives can be related to the following broad categories:

- *Operations* – the effectiveness and efficiency of operations, including performance and financial stability goals;
- *Reporting* – the reliability, transparency and integrity of financial and operational information reporting; and
- *Compliance* – the standard of operating in accordance with laws, regulations, policies, procedures and contracts.

To assess these broad areas, risk models often use measures such as materiality, asset liquidity, management experience, quality of and adherence to internal controls, potential impact, degree of change or stability, timing and results of the last audit, complexity, and employee and public satisfaction.

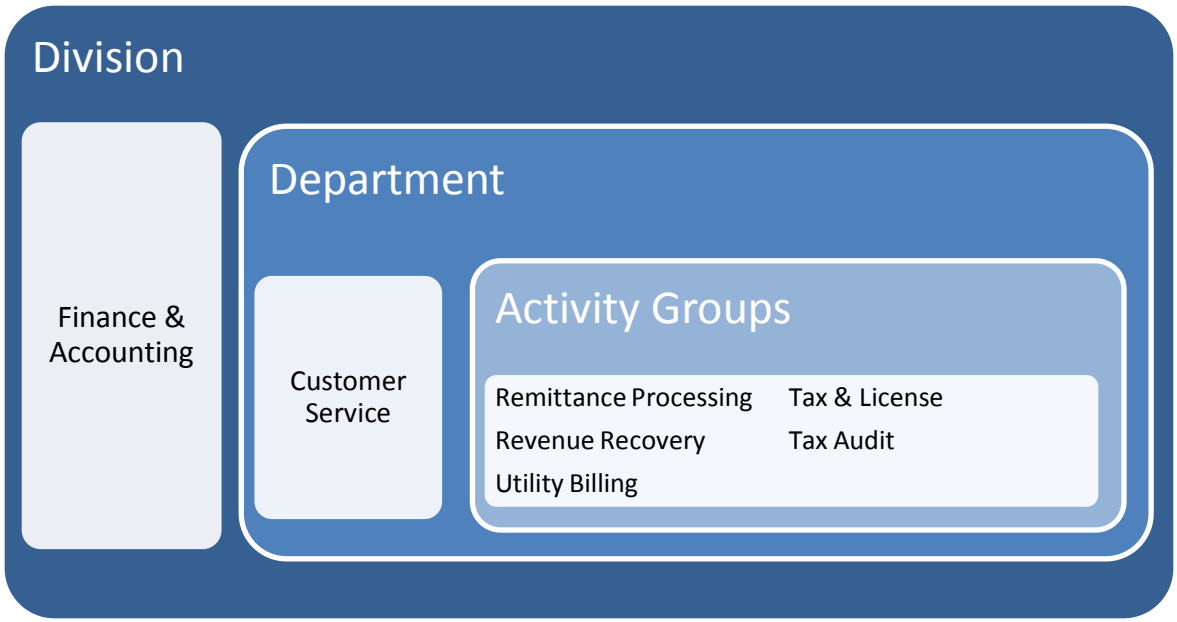
Developing an audit risk assessment model involves defining the audit universe, identifying the most relevant risk factors, developing the scoring ranges and comparative weights to be assigned to the factors, and collecting data to populate the model. These steps are described in the *Audit Risk Assessment Model* section of this report.

## AUDIT RISK ASSESSMENT MODEL

Developing a systematic risk assessment methodology requires defining the audit universe, identifying risk factors associated with the auditable units, developing the risk factors' scoring ranges and comparative weights, and collecting data to populate the model.

1. *Define the audit universe.* The audit universe consists of the identified activities that might be audited. As the example shows in Figure 1, these "auditable units" may be defined at the division level, the department level or the activity/function level.

**Figure 1. Example Division, Department and Activities**




The most commonly identified auditable unit is at the function or activity level.[1] Therefore, using Fiscal Year (FY) 2011/12 chart of accounts from the City's SmartStream accounting system, we derived a list of City offices/divisions with their departments and/or primary activities as the auditable units.

2. *Identify risk factors associated with these activities, or auditable units.* For the broad risk categories, auditors developed more specific risk measures, and then searched for relevant, available,

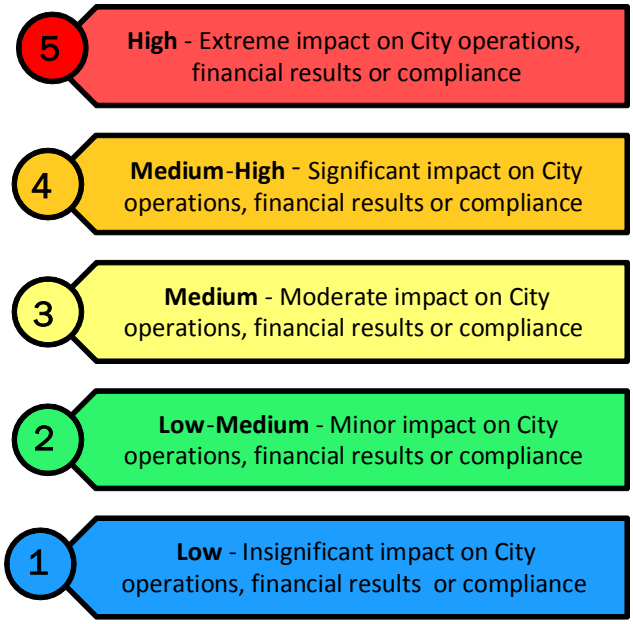
[1] Institute of Internal Auditors (IIA) *Knowledge Briefing: Defining the Right Audit Universe*, July 2009.

measurable data. For example, external perceptions of the City's service quality can be informed by the 2011 citizen survey results and accounting data can be analyzed to provide economic risk measures.

*Appendix A* provides examples to illustrate the risk factors, rating scales and criteria.

3. *Develop scoring ranges and comparative weights for the risk factors*. Audit risk assessment models often use a 5-point scoring range to differentiate the levels for risk elements. While the specific definitions are tailored to each measure, our 5-point scale follows the general definitions shown in Figure 2. For dollar values and other size factors, the 5-point scale was developed by stratifying all values into five groups based on value distributions.

**Figure 2. Scoring Range Definitions**




In addition to rating the auditable units' individual risk elements, the broad risk categories were weighted to reflect their varying impact. For example, the Significance group is currently weighted at 35% of the score, while Operations factors is at 25%, Reporting factors at 15%, Change 15% and Mitigating Factors 10%. A separate Compliance risk category was not created at this time as the rated compliance elements fit well in other categories,

particularly in Operations and Change.

These factors, scoring ranges and weights comprise the Audit Risk Assessment model, which is being developed in an Access database.

4. *Collect data to populate the Audit Risk Assessment Model.* With assistance from the City's system integrators and other staff, auditors are obtaining and importing financial and operational data into the database. For select factors, auditors will assign ratings based on professional judgment and discussions with staff responsible for the activities. Other potential desirable factors may be added later as data sources become available. The Audit Risk Assessment database will then calculate the overall risk score for each activity or auditable unit. These ratings will provide an initial basis for developing annual audit plans.

   *Appendix B* uses two activities' ratings and scores based on preliminary data to illustrate the model's results.

   Initially, the Audit Risk Assessment model will be populated with FY 2010/11 and FY 2011/12 data from the City's financial and operational information systems. Prior to developing the Preliminary FY 2013/14 Audit Plan, auditors will add FY 2012/13 budget data as well.

# APPENDIX A: EXAMPLE RISK FACTORS, RATING SCALES, AND CRITERIA

## Group 1: SIGNIFICANCE

Significance factors include size and complexity measures. Size risk measures reflect the risks associated with magnitude of dollars and employees being managed, while Complexity risk measures are associated with the nature and complexity of operations. Significance includes such measures as expenditures, number of full-time equivalent (FTE) employees, diversity of services, and complexity of information technology supporting key aspects of the business.

***Expenditures***

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Expenditure Range** | $0 - $50K | >$50K - $250K | >$250K - $750K | >$750K - $1.5M | >$1.5M |

Data Source: Budget or actual data from the City's accounting and budget systems.

***Extent of IT in Business Applications***

*Rating Criteria: Extent of IT applications, including spreadsheets, used to support key business processes (transactions, analysis, or reporting).*

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Extent of Information Technology Supporting Work/Area** | No technology involved in processing transactions, analysis or reporting. | Minimal technology; significant manual processing. | More computerized than manual processing. | Highly computerized with minimal manual processing. | Highly computerized; little or no manual processing. |

Data Source: Auditor assessment of information provided by Division/Department or IT staff.

## Group 2: CHANGE

*Change* factors reflect the risk that changes in City operations could negatively impact citizens or City service delivery. This rating can reflect adjustments such as change to a new or unfamiliar process, new or untried management systems or strategies, or new management, personnel, or compliance requirements. Change encompasses such measures as budget trends, FTE trends, employee turnover, years of service lost, organizational changes and revenue trends.

***5-Year Budget Trend***

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Percentage Change in Budget (+ or -)** | 0% - 10% | >10% - 20% | >20% - 40% | >40% - 80% | >80% |

Data Source: Budget and actual data from the City's accounting and budget systems.

## Group 3: OPERATIONS

*Operations* factors include risks associated with the organization's ability to plan and achieve its goals and objectives, meet public expectations, manage safety and liability, and encourage ethical behavior.

**Planning and Performance**—this area includes such measures as performance measurement trends, employee satisfaction, actual expenditures variance from budget and overtime as a percentage of salary expenditures.

***Performance Results***

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Benchmark Comparison Results**<br>***-or-*** | Performance significantly better than comparable entities. | Performance moderately better than comparable entities. | Performance the same as comparable entities. | Performance moderately worse than comparable entities. | Performance significantly worse than comparable entities. |
| **Performance Measurement and Reporting** | Meaningful measures used and consistently reported. | | Some meaningful measures but others are missing; inconsistencies in reporting and calculations. | | No measures tracked, poor measures; significant inconsistencies in reporting or calculations. |

Data Source: Performance measures in budget documents or departmental plans.

**Public Relations** —this area may be informed by measures such as the 2011 citizen survey, City Council meeting agendas, and the 2011 employee survey.

***Citizen Survey***

*Rating Criteria: Scottsdale citizen ratings for City service areas compared to national benchmarks by the National Research Center, Inc. and the ICMA.*

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Activity Rating** | Much above National benchmark | Above National benchmark | Similar to National benchmark | Below National benchmark | Much below National benchmark |

Data Source: The 2011 National Citizen Survey conducted by the National Research Center, Inc. and the ICMA for the City of Scottsdale.

**Safety and Liability**—unsafe working conditions, improper work processes, or inherently risky work activities could result in injury or damage to citizens, employees or property and may be measured by workers compensation claims, legal claims, and lawsuits paid.

***Workers Compensation Claims Paid***

*Rating Criteria: The number of workers compensation claims paid may be an indicator of both inherent risk and control risk. Departments with more claims may have a greater inherent risk due to the nature of work performed. However, more claims could indicate that procedures, training, or other controls do not mitigate inherent risks stemming from the nature of work performed.*

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Workers Compensation Claims per FTE** | 0 - 0.05 | >0.05 - 0.10 | >0.10 - 0.25 | >0.25 - 0.50 | >0.50 |

Data Source: Analysis of Workers Compensation paid claims data.

**Ethics**—vulnerability to fraud, waste, and abuse, or unethical behavior can negatively impact citizens as well as the City organization. Measures include liquidity of assets, cash handling, and employee ethics policy and training.

***Liquidity of Assets***

*Rating Criteria: Liquidity of assets refers to how easily an asset can be misplaced, stolen, or converted to cash. Smaller easily convertible commodities (such as tools, small equipment, and supplies) are inherently more subject to loss than larger assets, such as buildings.*

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Commodity Expenditures** / **Total Expenditures** | 0% - 2.5% | >2.5% - 5.0% | >5.0% - 10% | >10% - 20% | >20% |

Data Source: Budget or actual expenditures from the City's accounting and budget systems.

## Group 4: REPORTING FACTORS

Reporting factors reflect the transparency and reliability of financial or operational reports filed by the area, including such measures as frequency, public availability and complexity of the reports.

***Public Availability***

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Report Availability** | Provided on City Council agenda | Posted to City website, but not Council agenda item | Filed with state or federal agency for review | Available upon request | Not a public report or not known to exist |

Data Source: City Auditor's analysis of City website, Council meetings, and division inquiries.

## Group 5: MITIGATING FACTORS

Mitigating factors represent additional oversight expected to reduce operations or compliance risk, such as independent reviews by outside agencies, City Auditor's Office audits, or external audits.

***Independent Oversight***

| Rating | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| **Number of Entities Providing Oversight** | 4+ | - | 1 - 3 | - | 0 |

Data Source: Documentation of external entity reviews provided by staff.

## APPENDIX B: EXAMPLE ACTIVITY LEVEL RATINGS AND SCORES

The Audit Risk Assessment model includes defined risk groupings of Significance, Operations, Reporting, Change and Mitigating Factors. The following examples illustrate preliminary ratings within a single risk group and the preliminary overall scores derived for two selected activities.

**A Single Risk Group**

Based on available financial reports, surveys, and operational data, auditors will assess various risk factors within each risk grouping using a scale of 1 (low) to 5 (high). Within the Significance risk group, as shown below, an activity's size and complexity are assessed using such measures as full-time equivalent staff (FTE) and annual expenditures. (The ratings shown below are based on preliminary data. They demonstrate the model rather than provide a final assessment of these two activities' relative risks.)

| Risk Factor | Risk Measure | Rating | |
|---|---|---|---|
| | | Benefits Mgmt | Fleet Mgmt |
| Size | Expenditures | 5 | 4 |
| | FTE | 3 | 5 |
| | Revenue | 4 | 3 |
| | Capital Projects | 1 | 5 |
| Complexity | IT Processing | 3 | 2 |
| | Contract Expenditures | 5 | 1 |
| | Outsourcing Reliance | 2 | 1 |
| | Innovative State | 3 | 1 |
| Significance Risk Group —Average rating | | **3.25** | **2.75** |

**Overall Risk Score**

The risk model compiles each risk group's average rating and, based on each risk group's assigned weight, calculates an overall risk score. Again, the ratings and scores shown here are only for illustration purposes.

| Activity | Significance (35%) | Operations (25%) | Reporting (15%) | Change (15%) | Mitigating Factors (10%) | Overall Score |
|---|---|---|---|---|---|---|
| Benefits Mgmt | 3.25 | 1.67 | 2 | 1.5 | 1.75 | 2.254 |
| Fleet Mgmt | 2.75 | 2.82 | 3 | 2.25 | 3.25 | 2.780 |

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