AUDIT REPORT
Office of Emergency Management and Homeland Security and Office of Human Resources
Continuity of Operations
December 2017
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Audit report year: 2017
AUDITOR'S REPORT

We have completed an audit of the City and County of Denver's continuity of operations. The objective of the audit was to determine the extent to which the City is prepared to continue mission-essential functions and services that City agencies provide to the public in the event of an emergency event.

As described in the attached report, our audit revealed that the Office of Emergency Management and Homeland Security is not providing sufficient citywide guidance and training to ensure that agencies are prepared to continue mission-essential activities should a disaster occur. Specifically, we found that the office is not meeting its obligations under Executive Order 85, including ensuring that all agencies have continuity of operations plans and carrying out regular training on and exercising of those plans. We also noted that the software used by the Office of Emergency Management and Homeland Security has inadequate access controls.

Through stronger and more robust continuity of operations plans, agencies throughout the City will be better prepared to continue their operations, provide services, and protect City data in the event of a disaster or disruption. Our report lists several related recommendations.

This performance audit is authorized pursuant to the City and County of Denver Charter, Article V, Part 2, Section 1, General Powers and Duties of Auditor, and was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We extend appreciation to the Office of Emergency Management and Homeland Security as well as the Office of Human Resources and the personnel who assisted and cooperated with us during the audit.
Continuity of Operations
December 2017

Objective
The objective was to evaluate the City’s readiness for recovery and restoration of mission-essential (or critical) citywide government operations in the event of an extended loss of City facilities or services. The audit included observing and understanding practices in place, and testing of the system of record that stores, develops, and modifies City agencies’ recovery plans.

Background
Executive Order 85 establishes a set of rules for the City of Denver’s preparedness for response and recovery in the event of a disaster. The Office of Emergency Management and Homeland Security collaborates with government agencies to help them prepare their continuity of operations plans, and includes advising and assisting the Mayor in determining the City’s goals and policies for the performance of these functions. The executive order also directs City agencies to prepare individual continuity of operations plans which outline their prevention and mitigation processes. See appendix C for an excerpt of the Executive Order 85.

Highlights
The audit found that the Office of Emergency Management and Homeland Security needs to take further action to improve the Continuity of Operations for City agencies. The City is not prepared to sustain mission-essential functions—such as providing frontline services to citizens and maintaining city infrastructure—in the event of a disaster; moreover, the software used to manage Continuity of Operations plans has user access control weaknesses.

The following list further specifies the findings related to our evaluation:

• Three agencies did not certify their mission-essential functions;
• The contract to use the cloud-based planning software lapsed for three months;
• Continuity of Operations Plans (COOP) for City agencies can be enhanced;
• Alternate facilities may not be available for some City agencies;
• There is a lack of sufficient training for agency development of COOPs;
• The Continuity of Government plan and agency Continuity of Operations plans are not exercised periodically;
• There is a lack of agency testing over alert and notification procedures; and
• Unauthorized users have access to the City’s cloud-based Continuity of Operations planning software.

Identified weaknesses over the processes involved in Continuity of Operations increase the risk of the City not being prepared in the event of a disaster. This could lead to several time-sensitive performance and operations issues causing increased costs and potential damage to City infrastructure, services and reputation.

For a copy of this report, visit www.denvergov.org/auditor or contact the Auditor’s Office at 720.913.5000.
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BACKGROUND

Governments Need to Prepare for Disasters

Globally, 2016 was marked by approximately 300 natural and man-made disasters, including mass shootings and acts of terrorism. Overall losses totaled approximately $175 billion, almost double that of 2015. The losses were not just material; approximately 11,000 people lost their lives or went missing in disasters during the year.\(^1\) In 2017, Hurricane Harvey’s landfall in Houston and Hurricane Maria’s landfall in Puerto Rico and the Virgin Islands left dozens of people confirmed dead or missing and resulted in tens of billions of dollars in property damage.\(^2\) Local, state, and federal governments have scrambled to provide citizens’ basic needs for food, water, and shelter.

The City and County of Denver (City) is not in danger of experiencing the direct effects of a hurricane but is susceptible to many other disasters, such as floods, blizzards and other extreme weather events, toxic substance releases, pandemics, acts of terrorism, and cyber-attacks, among other potential catastrophes. In 1965 Denver experienced a rainstorm flooding the South Platte River which resulted in toppled bridges, destroyed roads, and flattened homes.\(^3\) Governments, including the City, must seriously consider the possibility of natural or man-made disasters. Thus, it is imperative that the City is ready for any possible emergency circumstances that could disrupt services, also known as “continuity events.”

Continuity of Operations Ensures the Continuation of Mission-Essential Government Functions

“Continuity of operations,” as defined by the federal government’s standards, is an effort within individual executive departments and agencies to ensure that “mission-essential functions” continue to be performed during a wide range of emergencies, both natural and man-made. Mission-essential functions are activities that are conducted to accomplish an organization’s mission and serve its stakeholders.\(^4\)

The standards for continuity of operations are outlined in the Federal Emergency Management Agency Circular 1 for non-federal governments. These standards comprise some of the criteria used for this audit and were adopted as guidance by the City’s continuity of operations planners. The document, released in 2013, provides direction to non-federal governments for developing continuity plans and programs.\(^5\)

Lost Productivity in the Event of an Emergency Can Be Costly

Running a local government is an expensive endeavor. The City’s personnel costs in 2016 totaled approximately $1.2 billion—more than $575,000 per hour—so to disrupt the City’s operations even

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\(^5\) FEMA Continuity Guidance Circular 1, accessed October 2017, [https://www.fema.gov/media-library-data/1386609058803-b084a7230663249ab1d6da4b6472e691/CGC-1-Signed-July-2013.pdf](https://www.fema.gov/media-library-data/1386609058803-b084a7230663249ab1d6da4b6472e691/CGC-1-Signed-July-2013.pdf)
for a short time can be costly.\textsuperscript{6} This figure does not even consider the monetary or opportunity costs to businesses resulting from disruption of City services. In the event that the City is forced to cease normal operations as well as provide emergency services in response to an emergency, costs can skyrocket.\textsuperscript{7}

Executive Order 85 Establishes the Role of the Office of Emergency Management and Homeland Security

The City's responsibility for protecting its citizens through preparing for and responding to disasters is established in Executive Order 85. Signed in 2011 by Mayor Guillermo “Bill” Vidal, Executive Order 85 defines the mission, organizational structure, and responsibilities of the Office of Emergency Management and Homeland Security. It also establishes policies on disaster prevention, preparedness, mitigation, response, and recovery and critical infrastructure protection for all City departments and agencies.

Executive Order 85 also mandates the creation and maintenance of the City's Emergency Operations Plan (EOP) and continuity of government (COG) plan for continued government operations and individual agencies' continuity of operations (COOP) plans for continued agency operations. The EOP is the comprehensive plan governing the roles, responsibilities, and functions of City Departments and Agencies and partners in the private sector, non-governmental organizations, faith-based organizations, schools and higher education organizations, utility providers, and State and Federal Government during large, complex emergencies and declared disasters. The Emergency Operations Plan defines the concept of how the whole community unites to manage emergency response resulting from natural and intentional scenarios such as technological and acts of terrorism. The Local Hazard Mitigation Plan is the framework which guides the City and County of Denver in mitigating the adverse impacts of emergencies and declared disasters. A COG plan establishes overarching procedures that provide for continued essential nonemergency government operations in the case of a catastrophic event. The City's COG plan outlines the duties of the Director of Emergency Management, which includes a collaborative role across City agencies. A COOP plan includes the identification of critical services and provides details for how to restore these services in a timely manner.


The Mayor's Office of Emergency Management and Homeland Security (Emergency Management) was established in its current form in 1996. Emergency Management is responsible for developing and maintaining Denver's Emergency Operations Plan and its plan for continuity of government, and overseeing the content used to create agency COOP plans. Additional responsibilities include:

- Coordinating emergency planning across over 300 government and non-government partners at the local, regional, and state levels.
- Managing multiple mass warning and notification systems.


\textsuperscript{7} Ibid.
Managing the primary and alternate facilities for the Mayor’s Emergency Operations Center.

- Coordinating and facilitating training, exercise, and evaluation of all first responders and emergency responders in development of action plans.
- Coordinating community outreach with Denver employees, residents, businesses, private sector industry, non-governmental organizations, and faith-based organizations.
- Coordinating the critical infrastructure program and homeland security operations for the City.
- Managing registration of over 250 critical assets identified as public and private critical infrastructure.

The City owns approximately 250 facilities that are located within Denver and operated by many different City agencies. Emergency Management must incorporate these facilities and employees into Denver’s overall continuity planning activities. Each facility must be factored into its respective agency’s COOP plan as well as the City’s broader COG plan. Appendix B demonstrates the multitude of Emergency Management’s services, and the map included in Appendix A shows the location of the City’s facilities.

Emergency Management offers periodic emergency preparedness trainings to the Denver community, including Community Emergency Response Training (CERT), the Face 2 Face Resiliency Program, an active shooter program, and lunch-and-learn events. Both the CERT and Face 2 Face programs are specifically aimed at increasing the public’s knowledge of what to do in emergency and disaster situations. Both programs specifically educate citizens on how to plan for a disaster by training on fire safety, team organization, and disaster medical operations.

Emergency Management also participates in the DenverREADY program. The DenverREADY approach allows residents, businesses, local authorities, and emergency management personnel to understand and assess the needs of their communities, organize resources, and prepare for emergency events. This is part of Denver’s “whole community preparedness programs,” which are composed of distinct emergency preparedness curricula designed to reach every aspect of a community.

**Business Continuity** - Government continuity of operations is meant for governments to remain functional and restore services following a disaster. Business continuity deals with the resumption of normal business activity immediately after a continuity event. When business activity is disrupted in a community, it can cause cascading failures of increased expenditures, destroyed livelihoods, and ultimately diminished tax revenues that provide vital services to businesses and residents. Emergency Management plays a critical role in assisting Denver businesses with emergency preparedness via outreach and education. Furthermore, Emergency Management effectively and efficiently provides core services to a variety of stakeholders such as local businesses.

**Funding for the Office of Emergency Management and Homeland Security Comes Primarily from Federal Grants**

Emergency Management’s budget is appropriated from two sources: the City’s general fund and several federal grants. The general fund is the largest and most important of Denver’s funds, representing all revenue not legally restricted to a specific use. The fund is composed of money collected from sales tax and local property tax as well as other unreserved revenues from fees and fines. Federal grants are restricted for specific purposes or for use within a specific time frame.
Emergency Management’s general fund appropriations are used to pay for its organizational needs, including salaries for seven of its ten employees. Federal grants fund the other three positions. Emergency Management receives five grants from the federal government: two fund FEMA-approved disaster planning and three fund activities related to terrorism, security, and the Emergency Operations Plan. The grants awarded to the City by the federal government reimburse a portion of Emergency Management’s expenditures.

The appropriated amount of general fund dollars to Emergency Management has been slowly increasing year over year, coinciding with a significant decrease in grant funding, meaning a net decrease over the period. Specifically, the agency’s operating budget reduced from $5.1 million in 2015 to $3.8 million in 2017. Federal grants comprised 89 percent, 84 percent, and 78 percent of Emergency Management’s budget over the years 2015, 2016, and 2017, respectively. Figure 2 shows these funding levels and the associated decline.

**Figure 2. Office of Emergency Management and Homeland Security Funding**

[Bar chart showing funding levels for 2015, 2016, and 2017 across Grants, General Fund, and Totals]

*Source: Created by Audit Services Division*

**Four Federal Grants Serve as Significant Sources of Emergency Management Funding**

There are four primary grant sources Emergency Management receives as part of its annual budget. The following bullets describe how they are used by the City:

- **Emergency Management Performance Grant Program** - Reimburses the agency for eligible operational costs, including costs related to administration, emergency planning, training, exercises, hazard mitigation, the Emergency Operations Center, disaster response, and disaster recovery
• **Hazard Mitigation Grant Program** - Used to develop a local Hazard Mitigation Plan Update that requires FEMA approval, and to purchase capital assets related to hazard mitigation, such as generators, transfer switches, and construction management costs

• **Urban Area Security Initiative Program** - A federal, multi-jurisdictional grant intended to enhance the Denver metro area’s capacity to prevent terrorist attacks

• **FEMA Flood Projects Grants** - This funding is only available after a presidential disaster declaration for a specific emergency in a specified geographic area identified by FEMA. The grant reimburses the City for 75 percent of the federal share of FEMA assistance program expenditures necessitated by a disaster.8

**The Office of Human Resources Served as the Test Agency for This Audit**

We chose to focus our audit testing on the Office of Human Resources because of its importance to and how they interface with every other City agency. The office serves more than 11,000 employees, and its stated mission is to identify, develop, and deliver programs and services to build workforce capability and drive business outcomes that best serve the public interest.9

In compliance with Executive Order 85, the Office of Human Resources created and has maintained a COOP plan with Emergency Management since 2006, and it is updated at least annually. The agency’s COOP plan provides the orders of succession, alternate facilities, key contacts, essential functions, and alert notification procedures to be used in the case of a continuity event. Human Resources needs to be operational so that other City agencies can be appropriately staffed to resume normal, nonemergency operations.

**Emergency Management Planning Software Stores Continuity of Operations Plans**

Since 2009, Human Resources and other City agencies have utilized a cloud-based planning software system to create, store, and modify their respective COOP plans. Emergency Management manages the software and the contract between the City and the vendor. Additionally, the software has been made available to the surrounding municipalities as part of the City’s agreement with the vendor.

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OBJECTIVE

The objective of the audit was to evaluate the City’s readiness for recovery and restoration of the City’s nonemergency operations during extended loss of government services or facilities. The audit included observing and understanding practices in place, and testing the system of record that creates, stores, and modifies the continuity of government plan and City agencies’ continuity of operations plans.

SCOPE

The scope of the audit was limited to the Office of Emergency Management and Homeland Security’s processes and oversight of the continuity of government plan, including a review of the Office of Human Resources’ continuity of operations plan. Our audit work focused on the efficacy of the continuity of government plan and the Office of Human Resources’ continuity of operations plan as of July 2017 through October 2017. Some aspects of the audit, such as the review of Emergency Management’s budgets, spanned the period from 2015 through 2017.

METHODOLOGY

To achieve the audit objectives, we employed the following tools and techniques:

- Reviewing prior Audit Services Division audit reports and relevant reports from other local government audit offices
- Inspecting the Office of Human Resources’ continuity of operations plan and the City’s continuity of government plan for evidence of updates and approvals
- Conducting interviews with key stakeholders in the Office of Human Resources and the Office of Emergency Management and Homeland Security
- Inspecting federal grants and the Mayor’s annual budget book to determine how much is allocated to continuity of operations planning
- Reviewing relevant executive orders, local preparedness circulars, federal preparedness circulars, and other similar guidance
- Reviewing the internal controls for the key application that manages City agencies’ continuity of operations plans
- Interviewing relevant personnel and inspecting applicable documentation of alternate relocation facilities as they relate to the Office of Human Resources
- Reviewing the contract between the City and the cloud-based continuity planning software provider
- Assessing documentation addressing the prioritization of operations and personnel
- Obtaining evidence of communication and collaborative activities that exist between individual agencies and the Office of Emergency Management and Homeland Security
- Reviewing vital records, including storage locations
FINDING 1

The City and County of Denver Is Not Prepared to Provide Essential Government Services in the Event of a Disaster

In assessing the City’s readiness for recovery and restoration of operations in the event of an emergency or extended loss of City services, we found that the Office of Emergency Management and Homeland Security (Emergency Management) is not meeting all of its obligations under Executive Order 85. This was apparent in a number of areas. Specifically, with regard to the City’s continuity of government plan, we noted the inclusion of outdated information. Similarly, some agency continuity of operations plans are out-of-date—or nonexistent—and many did not properly assess the viability of the alternative locations they identified. Finally, neither the continuity of government plan nor the agency continuity of operations plans are exercised annually, and agency employees are not trained regularly.

In addition to shortcomings with formal continuity plans, we also identified problems with some of the City’s continuity tools. Specifically, the contract for the planning software that stores all of the City’s continuity plans lapsed for a period of time. Additionally, agency alert and notification procedures are not being tested periodically. By enhancing agency training and oversight, as well as improving internal operational systems, Emergency Management will be better positioned to provide the crucial guidance it is called to perform by Executive Order 85.

The Continuity of Government Plan Lacks Up-to-Date Critical Information

The City’s continuity of government plan (COG plan) requires Emergency Management to request and obtain identification and approvals of individual agencies’ mission-essential functions on an annual basis. Information gathered from agencies would include any updates or revisions to agency continuity of operations plans (COOP plans). After requesting evidence of this information from the past three years, Emergency Management could not provide complete documentation of these approvals.

Additionally, three agencies did not certify with Emergency Management their mission-essential functions for inclusion in the 2016 COG plan, as required. Specifically, the Office of the Clerk and Recorder, the Denver Sheriff Department, and the City Council did not submit their mission-essential functions. Emergency Management did not follow up with these three agencies to obtain the required information.

Auditors recognize the nature of competing demands on limited government resources. However, the timely review of the mission-essential functions is critical for ensuring that information within agency COOP plans—such as key personnel, technology, and essential functions—is accurate and current. Out-of-date information could lead to a failure to effectively execute on continuity plans and ultimately result in a temporary cessation of critical government services.
The City’s Cloud-Based Continuity Planning Software Contract Lapsed for Nearly Three Months

Emergency Management uses a cloud-based continuity planning software system to create, store, and modify the City’s continuity of operations plans. The seventh amendment to the contract between the software provider and the City expired on April 30, 2017. The eighth amendment, however, was not signed, executed, and official until July 20, 2017, resulting in a three-month lapse of coverage. During the three-month window, Emergency Management retained access to the City’s continuity plans and other information because the vendor allowed continued access during its contract negotiations with the City. Further, Emergency Management had prepared for a potential loss of access by downloading copies of all agency COOP plans.

Budget discrepancies prolonged contract negotiations between the City and the vendor. This was caused by several factors, including negotiations for a one-year extension that became complicated as the parties disagreed on whether or not to use shared grant funding to cover the cost of the software. Additionally, other regional governments that utilize the COOP plan software did not agree to continue to contribute funding. Without this additional financial help, the contract extension price exceeded the Emergency Management’s software budget. Eventually, the vendor offered a discounted renewal price. To avoid this prolonged negotiation in the future, potential software replacements will be evaluated using a request for proposal process.

Although no continuity event occurred during the lapse in the software contract, a future lapse would put the City at risk of losing access to agency continuity plans. Additionally, the plans could be lost or deleted.

RECOMMENDATION 1.1

The Executive Director of the Office of Emergency Management and Homeland Security should create an annual schedule to request required continuity of operations plan updates from City agencies and a process to track compliance with the requested plan updates. All supplied documentation should be retained with the appropriate approvals.

Agency Response: Agree, Implementation Date - February 7, 2018

RECOMMENDATION 1.2

The Executive Director of the Office of Emergency Management and Homeland Security should establish a process to review and update the contract with the continuity of operations software provider before the expiration of the current contract to prevent the potential loss of software services and access to agencies’ continuity plans.

Agency Response: Agree, Implementation Date - Implemented
Continuity of Operations Plans for City Agencies Have Not Been Developed or Should Be Enhanced

Continuity of operations plans (COOP plans) are fundamental to successful continuation of mission-essential activities in the wake of a disaster. COOP plans document key agency information, including contacts, alternate work space, and data systems and requirements. However, audit work found that not all agencies have COOP plans and, of the ones that do exist, they are not all reviewed and updated regularly.

Not All Agencies Have Continuity of Operations Plans

Executive Order 85 requires each City department or agency to prepare and keep current a COOP plan. There are approximately 53 agencies and departments that should have a current, active COOP plan. Some departments and agencies may have more than one COOP plan based on the extent of services they provide. For example, the Department of Public Works has multiple COOP plans, including one for each of the following divisions: Fleet Management and Right-of-Way Enforcement. However, our testing revealed that the following five City agencies do not have a COOP plan:

- Office for Human Rights and Community Partnerships
- Office of Children’s Affairs
- Office of HOPE (Housing and Opportunities for People Everywhere)
- Office of the Independent Monitor
- Office of the Municipal Public Defender

After identifying these five agencies, we tried to assess why they may not have COOP plans. For some, it may be because they were only recently created. For example, the Office of HOPE was announced by Mayor Michael Hancock in July 2016 and began operating after Hancock hired an executive director in January 2017. However, Executive Order 85 does not demonstrate how soon a continuity plan should be completed after the creation of a new agency. Additionally, Emergency Management has not provided guidance regarding COOP plan creation timelines.

For the boards and commissions that we identified as not having COOP plans, we looked to the executive order for guidance, since they are not agencies or departments. However, Executive Order 85 does not mention them explicitly. The City’s broader COG plan does include entities beyond just agencies and departments, including courts, boards, commissions, and other quasi-governmental agencies that have a direct impact on the City’s ability to reestablish and maintain operations. They are also included where City support services are responsible for assuring workspace technology support, security, etc.

Without a COOP plan, an agency may be unprepared if a continuity event occurs. Additionally, centralized service agencies, such as Technology Services and General Services, would not be able to provide necessary assistance without key information about the agency’s data, systems, and relocation space requirements. Not being able to help the agency get up and running would likely result in delays in resuming services to citizens. Many City agencies provide critical services for the health and wellbeing of some of Denver’s most vulnerable populations, including children who benefit from summer food and after school meals programs.
Agencies Are Not Updating Their Continuity of Operations Plans Annually

We also noted that many of the agencies that created a COOP plan do not review and update their plans on an annual basis. During testing we found that 29 out of 69 COOP plans had not been reviewed in 2017. Of those 29, there were 3 that had not been reviewed since 2011.

We sought to determine why so many COOP plans are not being regularly reviewed and updated. We believe this is partially because Executive Order 85 is not very specific, only requiring that plans be kept “current”. Agency circumstances likely also play a role. For example, we noted one instance where the individuals who were assigned as the agency’s continuity planners are no longer employed by the City. Prior to their departure, remaining staff were not provided access to the continuity plan or the City’s continuity planning software. We also learned that Emergency Management does not notify agencies that have not reviewed their COOP plans.

The COG plan is clearer about timing than the executive order, specifying that agency COOP planners shall, in coordination with their agency head, assure the review and approval of their updated agency plan(s) annually. The Federal Emergency Management Agency (FEMA) Continuity Guidance Circular 1 for non-federal governments also provides relevant guidance, recommending an annual review and update if organizational changes have occurred.

If agencies are unaware that they have an existing COOP plan, or need to develop and annually review the plan, the City's agency continuity plans will continue to be out of date. This would put the City at risk of not being able to resume mission-essential activities in the face of an emergency or disaster. Therefore, it is incumbent upon Emergency Management to improve the manner and frequency of communication with agencies regarding their COOP plan responsibilities, based on Executive Order 85, the COG plan, and other relevant guidance. Regular reviews and updates will identify changes in key personnel, contact information, information systems, vital records, and availability and suitability of alternate facilities.

**RECOMMENDATION 1.3**

The Executive Director of the Office of Emergency Management and Homeland Security should provide additional guidance to agencies on their Continuity of Operations plans, including timelines for completing and updating plans for new and existing agencies and a process for reviewing and notifying agencies that are not in compliance with the timelines.

**Agency Response: Agree, Implementation Date - February 7, 2018**

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10 We identified 53 agencies, departments, and other offices that should have a COOP plan. However, there were 69 COOP plans in this test sample because some agencies have more than one COOP plan to more accurately capture the breadth of services they provide.
RECOMMENDATION 1.4

The Executive Director of the Office of Emergency Management and Homeland Security should identify and document which agencies, courts, boards, commissions, and other quasi-governmental agencies should be required to create and keep current a Continuity of Operations plan.

Agency Response: Agree, Implementation Date - February 7, 2018

Alternate Facilities Have Not Accounted for Space Limitations

A key step in creating a COOP plan is identifying alternative facilities where employees can temporarily relocate if the facility where the agency is located becomes unsafe or otherwise compromised. Each COOP plan identifies several potential alternative locations, including the number of staff that will likely need to relocate.

Each potential activation of the COG plan will be unique and it would be difficult to determine which of the more than 250 City facilities will be available. Therefore, it is necessary to create a Citywide prioritization process to determine which agency gets which available position at each alternative facility. General Services has been identified as the agency that is responsible for reviewing and prioritizing the overall assignment of alternative facilities for all agencies in the event the COG plan is activated.

The cloud-based continuity planning software can be used to analyze each COOP plan’s potential number of staff being assigned to each alternative facility. This information, when pulled from the software system, is known as the “deconflict report.” The report is generated using all COOP plans’ requirements for personnel and equipment needed at various alternative facilities during a relocation prompted by a continuity event.

After assessing whether proper relocation analysis was performed, we found that General Services did not have all necessary information to perform the prioritization process. Specifically, we ran a deconflict report to see how many personnel could be relocated to a specific facility for each agency in the system. The report showed “Not Available” for every agency, rather than showing an actual number. This occurred due to the unknown occupancy limitations that are essential for prioritizing agencies and their space requirements, such as number of personnel that need to be placed at alternative facilities. If essential data is not entered correctly into the cloud-based planning software, General Services will not be able to appropriately and objectively prioritize agency needs.
RECOMMENDATION 1.5

The Executive Director of the Office of Emergency Management and Homeland Security should confirm annually that all agencies have properly reviewed, updated, and confirmed their alternative facilities details and that the deconflict report provides the appropriate details to allow for the prioritization of assignment of alternative facilities.

Agency Response: Agree, Implementation Date - February 7, 2018


Audit work also found that Emergency Management has provided limited training to agencies regarding the development of their COOP plans. The training provided has primarily been limited to using the cloud-based continuity planning software. Based on interviews with executive personnel from the Office of Human Resources, Emergency Management did not provide the agency with direction for creating a successful COOP plan. Emergency Management failed to give direction on what the agency needs to consider during planning, which systems or processes may be critical, and how best to anticipate the agency’s needs in the event of an emergency.

It appears that lack of guidance led to confusion about record prioritization for our test agency. The Office of Human Resources COOP plan lists eight categories of records, including the agency’s compensation and classification database, as vital to the agency’s mission-essential activities. However, when auditors asked agency management about the records listed as vital in their COOP plan, they noted the compensation and classification database should not have been included because it wasn’t needed to support a mission-essential function.

The FEMA Continuity Guidance Circular 1 notes that a viable continuity plan includes the identification and availability of electronic and hardcopy documents and information systems needed to support essential functions during a continuity event. One of the sections of the Continuity of Operations plan is dedicated to the documentation of vital records and supporting information systems.

Vital records are essential for immediately restoring full operational capacity in the event of a disaster, as they include the data on which information systems operate. Because the Office of Human Resources has not received the appropriate guidance on how to identify vital systems, there is a risk that resources will not be properly prioritized for recovery of vital systems, further resulting in not having truly vital systems available when they are needed in the event of an emergency.

A citywide exercise simulates organizational and operational emergency activities in an informal setting and involves participation of key continuity personnel from different City agencies. The most basic type of exercise is known as a “table top” where data and agencies are not affected, but react by walking through various scenarios to determine whether the COG plan and COOP plans have sufficient detail to allow services to be restored in a timely manner. Exercising the COG plan and COOP plans validates the included policies and procedures, clarifies roles and responsibilities, provides valuable training on the operation of the COG plan and COOP plans, and identifies gaps in the operational environment.

The last Citywide exercise of the COG plan was performed in December of 2015. According to the FEMA Continuity Guidance Circular 1 guidelines, a citywide test and exercise should occur annually. Additionally, it recommends a comprehensive debriefing following each exercise allowing participants to identify systemic weaknesses in procedures and to update the organization’s continuity plans. The Continuity of Government Plan also addresses the need to ensure and validate continuity readiness through an integrated testing, training and exercise program. Emergency Management stated that the reason for lack of periodic testing is due to limited resources and funding.

Without periodically practicing the citywide COG plan through table top exercises, agencies may not be prepared to restore mission-critical operations in a timely and efficient manner.

RECOMMENDATION 1.6
The Executive Director of the Office of Emergency Management and Homeland Security should enhance the annual training to include a listing of training areas available and to obtain feedback from agencies to better understand their training needs in the development and revision of their continuity of operation plans.

Agency Response: Agree, Implementation Date - February 7, 2018
RECOMMENDATION 1.7

The Executive Director of the Office of Emergency Management and Homeland Security should annually perform integrated testing, training, and exercising of the Continuity of Government Plan and coordinate the testing of the Continuity of Operations Plans to validate the City’s continuity preparedness and operational capability. Problems noted during this testing should be identified, documented, and corrected in a timely manner.

Agency Response: Agree, Implementation Date - February 7, 2018

Lack of Periodic Testing over Alert and Notification Procedures

All City agencies are required to have some form of interdepartmental alert and notification procedures to communicate with employees in emergency situations. These alerts and notifications are sent to employees by their immediate supervisors through a variety of channels, including, phone calls, email, text message. According to FEMA Continuity Guidance Circular 1, organizations should establish and document procedures and provide the ability to communicate and coordinate activities, including alert and notification, with all personnel. It also recommends both annual and quarterly testing of an organization’s alert and notification system. Annually, an organization should test and document alert, notification, and activation procedures for those involved in continuity planning. Moreover, an organization should test the same procedures quarterly for subject matter experts at the organization’s headquarters.

During audit work, we again used our test agency—the Office of Human Resources—to assess whether testing is occurring in accordance with best practice, and learned that the office does not perform these tests either annually or quarterly. When asked why, executive management explained that they have not received guidance and training from Emergency Management. If the City’s alert and notification networks are not tested regularly, there is a risk that they will not work properly in an actual continuity event and personnel will not be available or accounted for.

RECOMMENDATION 1.8

The Executive Director of the Office of Human Resources should ensure the testing of the alert and notification system procedures on an annual basis for continuity planning personnel. Additionally, they should ensure quarterly testing of such procedures for personnel at the agency’s headquarters. The results of these tests should be documented and retained. The reasons for failures of the alert process should be identified and corrected in a timely manner.

Agency Response: Agree, Implementation Date - March 31, 2018
RECOMMENDATIONS

We make the following recommendations to Emergency Management and Human Resources to improve controls surrounding Continuity of Operations planning:

1. **Updates**—The Executive Director of the Office of Emergency Management and Homeland Security should create an annual schedule to request required continuity of operations plan updates from City agencies and a process to track compliance with the requested plan updates. All supplied documentation should be retained with the appropriate approvals.

   **Auditee Response: Agree, Implementation Date - February 7, 2018**

   Auditee Narrative: Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation for departments/agencies to review and update all aspects of their continuity programs per paragraph 5.0 of Executive Order 85 and report status to Denver OEM for compliance monitoring.

1.2 **Contract Management**—The Executive Director of the Office of Emergency Management and Homeland Security should establish a process to review and update the contract with the continuity of operations software provider before the expiration of the current contract to prevent the potential loss of software services and access to agencies’ continuity plans.

   **Auditee Response: Agree, Implementation Date - Implemented**

   Auditee Narrative: Denver OEM has an established process to manage all applicable contracts and will continue to ensure that there is no loss or interruption of service. This process has been expanded as of 12/1/2017 to coordinate continuity contracts with the Office of Technology Services.

1.3 **Guidance and Training**—The Executive Director of the Office of Emergency Management and Homeland Security should provide additional guidance to agencies on their Continuity of Operations plans, including timelines for completing and updating plans for new and existing agencies and a process for reviewing and notifying agencies that are not in compliance with the timelines.

   **Auditee Response: Agree, Implementation Date - February 7, 2018**

   Auditee Narrative: Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include this recommendation. Denver OEM is currently conducting a review of Executive Order 85 to identify any gap related to continuity program guidance to be addressed in future revision of the order.

1.4 **Identify and Document Agencies**—The Executive Director of the Office of Emergency Management and Homeland Security should identify and document which agencies, courts, boards, commissions, and other quasi-governmental agencies should be required to create and keep current a Continuity of Operations plan.

   **Auditee Response: Agree, Implementation Date - February 7, 2018**
1.5 **Alternate Facilities**—The Executive Director of the Office of Emergency Management and Homeland Security should confirm annually that all agencies have properly reviewed, updated, and confirmed their alternate facilities details and that the deconflict report provides the appropriate details to allow for the prioritization of assignment of alternative facilities.

**Auditee Response: Agree, Implementation Date - February 7, 2018**

Auditee Narrative: Denver OEM has already addressed this recommendation with the City Attorney’s Office on 11/14/2017 to identify applicability of the continuity program requirements in Executive Order 85. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include guidance on required versus optional development of continuity programs per Executive Order 85.

1.6 **Training**—The Executive Director of the Office of Emergency Management and Homeland Security should enhance the annual training to include a listing of training areas available and to obtain feedback from agencies to better understand their training needs in the development and revision of their continuity of operation plans.

**Auditee Response: Agree, Implementation Date - February 7, 2018**

Auditee Narrative: Denver OEM has a comprehensive training, exercise, evaluation, and improvement planning process, which addresses this recommendation. Denver OEM requested and received funding for increased continuity training and exercises starting in January 2018. Denver OEM has established a Continuity Working Group in order to improve continuity capabilities across all City and County departments/agencies, which will begin meeting on 1/30/2018. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include this recommendation and collection of department/agency input.

1.7 **Testing, Training & Exercising**—The Executive Director of the Office of Emergency Management and Homeland Security should annually perform integrated testing, training, and exercising of the Continuity of Government Plan and coordinate the testing of the Continuity of Operations Plans to validate the City’s continuity preparedness and operational capability. Problems noted during this testing should be identified, documented, and corrected in a timely manner.

**Auditee Response: Agree, Implementation Date - February 7, 2018**

Auditee Narrative: Denver OEM has a comprehensive training, exercise, evaluation, and improvement planning process, which addresses this recommendation. Denver OEM requested and received funding for increased continuity training and exercises starting in January 2018. Denver OEM will be conducting multiple Continuity Trainings, a Continuity Program Workshop, and a Continuity Tabletop Exercise in 2018 with additional training and exercises in 2019 and 2020 per the City and County of Denver
OEM’s Multi-Year Training and Exercise Plan. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation for departments/agencies to conduct additional training and exercises per paragraph 5.6 of Executive Order 85 and report results and improvement plan input to Denver OEM.

1.8 **Testing Alert Notifications**—The Executive Director of the Office of Human Resources should ensure the testing of the alert and notification system procedures on an annual basis for continuity planning personnel. Additionally, they should ensure quarterly testing of such procedures for personnel at the agency’s headquarters. The results of these tests should be documented and retained. The reasons for failures of the alert process should be identified and corrected in a timely manner.

**Auditee Response: Agree, Implementation Date - March 31, 2018**

Auditee Narrative: The Executive Director of the Office of Human Resources will ensure that OHR agency personnel are informed and educated on the COOP program. We will conduct testing of the alert and notification system procedures on an annual basis for continuity planning personnel. In addition, OHR will provide quarterly testing of such procedures for all agency personnel and document the outcome.
FINDING 2

The City’s Continuity Planning Software Lacks Strong Access Controls

The Office of Emergency Management and Homeland Security (Emergency Management) uses a cloud-based continuity planning software system to store, develop, and document the City’s continuity of operations plans. In assessing the City’s use of the software, we found several issues with security, including flaws in access controls. Specifically, we found that unauthorized users had access to modify, change, and delete continuity of operations plans (COOP plans). Additionally, we determined that password controls are weak and do not align with City standards.

Unauthorized Users Can Access the City’s Continuity Planning Software

During test work, we found 47 former employees and contingent workers with varying permission levels who retained system access after they no longer needed it. Some had plan administrator access, which should be limited to very few users. This is because the plan administrator role can add or remove users for the specific plan they administer and can modify plan components. Inappropriate access is broken out as follows:

- One contingent worker had plan administrator access to 71 different COOP plans.
- Eighteen former users had plan administrator access.
- Twenty-five users had inappropriate plan user access.
- Four users had improper plan viewer access.

We also found that Emergency Management is not performing periodic user access reviews for all agencies and departments. These reviews would identify separated employees and contingent workers. In addition, the reviews would find employees that transferred into new roles that no longer require access to the software. This information would be used to remove unauthorized access to the system.

The National Institute of Standards and Technology (NIST) provides guidance on providing and reviewing user access. NIST Special Publication 800-53 revision 4 specifies that organizations should develop, document, and disseminate an access control policy. Emergency Management has not instituted any policies or procedures governing access control to the cloud-based planning software. Therefore, periodic access reviews of the continuity software were not conducted, leaving terminated employees and contingent workers with unnecessary access.

Because there are former employees and contingent workers that have retained varying levels of access, including plan administrator access, the City’s COOP plans are at risk of accidental or intentional exposure, such as modification or deletion of data, or even temporary loss of access to plans. If access to the software first required a valid City network password, this could act as a secondary control; Technology Services has a procedure in place to remove access for terminated employees and contingent workers. However, since the software is cloud-based, it allows anyone with an account to access the plans through the internet. This increases the need for periodic access review.

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11 One former employee had multiple access roles.
RECOMMENDATION 2.1
The Executive Director of the Office of Emergency Management and Homeland Security, in coordination with all agencies, should conduct an annual review of all users with access to the cloud-based continuity planning software, remove any users who no longer need access, and update other users access to the lowest level necessary to carry out their job responsibilities. The results of this review should be documented and retained in accordance with the City’s document retention policy.

Agency Response: Agree, Implementation Date - February 7, 2018

RECOMMENDATION 2.2
The Executive Director of the Office of Emergency Management and Homeland Security should work with Technology Services to have the cloud-based continuity planning software user access managed by subject matter experts with knowledge of industry best practices. Technology Services should then develop, document, and implement policies and procedures for periodic user access reviews for the software.

Agency Response: Agree, Implementation Date - February 7, 2018

Password Settings Do Not Adhere to City Requirements
We also examined the password controls for the continuity planning software as implemented by Emergency Management to determine if they were aligned with City policy. The Acceptable Use Policy, which was established by Technology Services, provides guidelines on password complexity and expiration timelines. Specifically, City passwords should:

- Be a minimum of eight characters, which should include at least three of the following character types: upper case, lower case, numeric, or special characters;
- Expire after 90 days; and
- Not be the same as any of the user’s previous 15 passwords.

In assessing the passwords used for the continuity planning software, we found that the password complexity and length rules exceed the requirements of the Acceptable Use Policy. However, the software does not enforce an automated password reset every 90 days.

When the software was originally selected by Emergency Management, Technology Services was not involved in the process. This would have allowed Technology Services to provide guidance on security configuration settings to ensure software compatibility with City requirements. During our assessment of this issue, we learned that the software can support this security feature. However,
to implement it, the other local metro government agencies that utilize the same software platform would need to agree to the change because they share the same underlying technology.

Without regular password changes there is a potential for an unauthorized user to gain access to the system. An unauthorized user could inadvertently or intentionally modify or delete information that is critical to the agencies’ continuity plans.

**RECOMMENDATION 2.3**

The Executive Director of the Office of Emergency Management and Homeland Security should work with Technology Services to assist in the evaluation of the cloud-based planning software to align with the City’s Acceptable Use Policy.

*Agency Response: Agree, Implementation Date – March 30, 2018*
RECOMMENDATIONS

We make the following recommendations to Emergency Management and Human Resources to improve controls surrounding Continuity of Operations planning:

2.1 **Unauthorized Users**—The Executive Director of the Office of Emergency Management and Homeland Security, in coordination with all agencies, should conduct an annual review of all users with access to the cloud-based continuity planning software, remove any users who no longer need access, and update other users access to the lowest level necessary to carry out their job responsibilities. The results of this review should be documented and retained in accordance with the City’s document retention policy.

**Auditee Response: Agree, Implementation Date - February 7, 2018**

Auditee Narrative: Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation to utilize existing access control procedures and report access control reviews to Denver OEM and Office of Technology Services for documentation and compliance.

2.2 **Software Access Policy**—The Executive Director of the Office of Emergency Management and Homeland Security should work with Technology Services to have the cloud-based continuity planning software user access managed by subject matter experts with knowledge of industry best practices. Technology Services should then develop, document, and implement policies and procedures for periodic user access reviews for the software.

**Auditee Response: Agree, Implementation Date - February 7, 2018**

Auditee Narrative: Denver OEM met with the Office of Technology Services to implement this recommendation on 12/1/2017. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation to utilize existing access control procedures and report access control reviews to Denver OEM and Office of Technology Services for documentation and compliance.

2.3 **Software Evaluation and Replacement Process**—The Executive Director of the Office of Emergency Management and Homeland Security should work with Technology Services to assist in the evaluation of the cloud-based planning software to align with the City’s Acceptable Use Policy.

**Auditee Response: Agree, Implementation Date - March 30, 2018**

Auditee Narrative: Denver OEM met with the Office of Technology Services on 12/1/2017 to implement this recommendation. The Office of Technology Services is reviewing the requirements for compliance with the City’s Acceptable Use Policy. Changes will be incorporated into future contracts for continuity software systems based upon guidance from the Office of Technology Services.
Appendix A - Location of City-Owned Facilities throughout the City and County of Denver
Appendix B - Depiction of Office of Emergency Management and Homeland Security

Source: Created by Audit Services Division
5.0 **Department/Agency Plan:** In addition to the activities specified in the Emergency Operations Plan, all Department and Agency Managers, or applicable designee, shall do the following:

5.1 Prepare and keep current Department/Agency Specific Emergency Plans and Procedures, in coordination with the Mayor's Office of Emergency Management and Homeland Security;

5.2 Prepare and keep current individual Department/Agency Continuity of Operations Plans (COOP). Each Department/Agency, or applicable designee, shall assign a COOP coordinator, who shall coordinate with the Office of Emergency Management and Homeland Security in the development and updates to the City's overall COOP and Continuity of Government Plan;

5.3 Develop plans that cover Preparedness, Protection, Prevention, Mitigation, Response, and Recovery activities that are appropriate for the mission of the Department/Agency;

5.4 Give appropriate consideration to emergency preparedness factors in the conduct of the regular functions of their agencies, particularly those functions considered essential in time of emergency;

5.5 Be prepared to implement all appropriate plans developed within the City and County of Denver Emergency Operations Plan;

5.6 Train and exercise those portions of their Department/Agency plans, in coordination with the City's Training and Exercise Plan developed by the Office of Emergency Management and Homeland Security that are the responsibility of their Department/Agencies at regular intervals.
Auditor Timothy O’Brien, CPA
Office of the Auditor
City and County of Denver
201 West Colfax Avenue, Dept. 705
Denver, Colorado 80202

Dear Mr. O’Brien,

The Office of the Auditor has conducted a performance audit of Continuity of Operations.

This memorandum provides a written response for each reportable condition noted in the Auditor’s Report final draft that was sent to us on November 14, 2017. This response complies with Section 20-276 (c) of the Denver Revised Municipal Code (D.R.M.C.).

AUDIT FINDING 1
The City and County of Denver is Not Prepared to Provide Essential Government Services in the Event of a Disaster

RECOMMENDATION 1.1
 Updates—The Executive Director of the Office of Emergency Management and Homeland Security should create an annual schedule to request required continuity of operations plan updates from City agencies and a process to track compliance with the requested plan updates. All supplied documentation should be retained with the appropriate approvals.

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<td>2/7/2018</td>
<td>Denver OEM Executive Director, R. Broughton, 720-865-7600</td>
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Narrative for Recommendation 1.1
Denver OEM will provide a Continuity Program Update to all City and County departments/agencies which will include the recommendation for departments/agencies to review and update all aspects of their continuity programs per paragraph 5.0 of Executive Order 85 and report status to Denver OEM for compliance monitoring.
**RECOMMENDATION 1.2**

**Contract Management**—The Executive Director of the Office of Emergency Management and Homeland Security should establish a process to review and update the contract with the continuity of operations software provider before the expiration of the current contract to prevent the potential loss of software services and access to agencies’ continuity plans.

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**Narrative for Recommendation 1.2**

Denver OEM has an established process to manage all applicable contracts and will continue to ensure that there is no loss or interruption of service. This process has been expanded as of 12/1/2017 to coordinate continuity contracts with the Office of Technology Services.

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**RECOMMENDATION 1.3**

**Guidance and Training**—The Executive Director of the Office of Emergency Management and Homeland Security should provide additional guidance to agencies on their Continuity of Operations plans, including timelines for completing and updating plans for new and existing agencies and a process for reviewing and notifying agencies that are not in compliance with the timelines.

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**Narrative for Recommendation 1.3**

Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include this recommendation. Denver OEM is currently conducting a review of Executive Order 83 to identify any gap related to continuity program guidance to be addressed in future revision of the order.

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**RECOMMENDATION 1.4**

**Identify and Document Agencies**—The Executive Director of the Office of Emergency Management and Homeland Security should identify and document
which agencies, courts, boards, commissions, and other quasi-governmental agencies should be required to create and keep current a Continuity of Operations plan.

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Narrative for Recommendation 1.4
Denver OEM has already addressed this recommendation with the City Attorney’s Office on 11/14/2017 to identify applicability of the continuity program requirements in Executive Order 85. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include guidance on required versus optional development of continuity programs per Executive Order 85.

RECOMMENDATION 1.5
Alternate Facilities—The Executive Director of the Emergency Management and Homeland Security should confirm annually that all agencies have properly reviewed, updated, and confirmed their alternative facilities details and that the deconflict report provides the appropriate details to allow for the prioritization of assignment of alternative facilities.

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Narrative for Recommendation 1.5
Denver OEM has initiated coordination with General Services to improve alternate facility deconfliction. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include this recommendation for departments/agencies to review and update all aspects of their continuity programs per paragraph 5.0 of Executive Order 85.

RECOMMENDATION 1.6
Training—The Executive Director of the Office of Emergency Management and Homeland Security should enhance the annual training to include a listing of training areas available and to obtain feedback from agencies to better understand their training needs in the development and revision of their continuity of operation plans.
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Narrative for Recommendation 1.6
Denver OEM has a comprehensive training, exercise, evaluation, and improvement planning process, which addresses this recommendation. Denver OEM requested and received funding for increased continuity training and exercises starting in January 2018. Denver OEM has established a Continuity Working Group in order to improve continuity capabilities across all City and County departments/agencies, which will begin meeting on 1/30/2018. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include this recommendation and collection of department/agency input.

**RECOMMENDATION 1.7**
Testing, Training & Exercising—The Executive Director of the Office of Emergency Management and Homeland Security should annually perform integrated testing, training, and exercising of the Continuity of Government Plan and coordinate the testing of the Continuity of Operations Plans to validate the City’s continuity preparedness and operational capability. Problems noted during this testing should be identified, documented, and corrected in a timely manner.

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Narrative for Recommendation 1.7
Denver OEM has a comprehensive training, exercise, evaluation, and improvement planning process, which addresses this recommendation. Denver OEM requested and received funding for increased continuity training and exercises starting in January 2018. Denver OEM will be conducting multiple Continuity Trainings, a Continuity Program Workshop, and a Continuity Tabletop Exercise in 2018 with additional training and exercises in 2019 and 2020 per the City and County of Denver OEM’s Multi-Year Training and Exercise Plan. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation for departments/agencies to conduct additional training and exercises per paragraph 5.6 of Executive Order 85 and report results and improvement plan input to Denver OEM.
AUDIT FINDING 2
The City’s Continuity Planning Software Lacks Strong Access Controls

RECOMMENDATION 2.1
Unauthorized Users—The Executive Director of the Office of Emergency Management and Homeland Security, in coordination with all agencies, should conduct an annual review of all users with access to the cloud-based continuity planning software, remove any users who no longer need access, and update other users access to the lowest level necessary to carry out their job responsibilities. The results of this review should be documented and retained in accordance with the City’s document retention policy.

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Narrative for Recommendation 2.1
Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation to utilize existing access control procedures and report access control reviews to Denver OEM and Office of Technology Services for documentation and compliance.

RECOMMENDATION 2.2
Software Access Policy—The Executive Director of the Office of Emergency Management and Homeland Security should work with Technology Services to have the cloud-based continuity planning software user access managed by subject matter experts with knowledge of industry best practices. Technology Services should then develop, document, and implement policies and procedures for periodic user access reviews for the software.

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Narrative for Recommendation 2.2
Denver OEM met with the Office of Technology Services to implement this recommendation on 12/1/2017. Denver OEM will provide a Continuity Program Update to all City and County departments/agencies, which will include the recommendation to
utilize existing access control procedures and report access control reviews to Denver OEM and Office of Technology Services for documentation and compliance.

RECOMMENDATION 2.3
Software Evaluation and Replacement Process—The Executive Director of the Office of Emergency Management and Homeland Security should work with Technology Services to assist in the evaluation of the cloud-based planning software to align with the City’s Acceptable Use Policy.

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Narrative for Recommendation 2.3
Denver OEM met with the Office of Technology Services on 12/1/2017 to implement this recommendation. The Office of Technology Services is reviewing the requirements for compliance with the City’s Acceptable Use Policy. Changes will be incorporated into future contracts for continuity software systems based upon guidance from the Office of Technology Services.

Please contact me at 720-865-7600 with any questions.

Sincerely,

Ryan Broughton

Ryan Broughton, CEM®, CBCP
Executive Director, Mayor’s Office of Emergency Management and Homeland Security (OEM)

cc: Valerie Walling, Deputy Auditor, CPA, CMC
    Kevin Sear, IT Audit Manager, CPA, CIA, CISA, CFE
    Shannon Kuhn, IT Audit Supervisor, CISA
    Penny May, Deputy Chief of Staff, Mayor’s Office
    Dave Edinger, Chief Performance Officer, Mayor’s Office
    Scott Cardenas, Executive Director, Office of Technology Services (TS)
December 6, 2017

Auditor Timothy O’Brien, CPA
Office of the Auditor
City and County of Denver
201 West Colfax Avenue, Dept. 705
Denver, Colorado 80202

Dear Mr. O’Brien,

The Office of the Auditor has conducted a performance audit of Continuity of Operations. This memorandum provides a written response for each reportable condition noted in the Auditor’s Report final draft that was sent to us on November 14, 2017. This response complies with Section 20-276 (c) of the Denver Revised Municipal Code (D.R.M.C.).

AUDIT FINDING I
The City and County of Denver Is Not Prepared to Provide Essential Government Services in the Event of a Disaster

RECOMMENDATION I.8
Testing Alert Notifications—The Executive Director of the Office of Human Resources should ensure the testing of the alert and notification system procedures on an annual basis for continuity planning personnel. Additionally, they should ensure quarterly testing of such procedures for personnel at the agency’s headquarters. The results of these tests should be documented and retained. The reasons for failures of the alert process should be identified and corrected in a timely manner.

<table>
<thead>
<tr>
<th>Agree or Disagree with Recommendation</th>
<th>Target date to complete implementation activities (Generally expected within 60 to 90 days)</th>
<th>Name and phone number of specific point of contact for implementation</th>
</tr>
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<tr>
<td>Agree</td>
<td>3/31/2018</td>
<td>Rory McLaster 720-913-5672</td>
</tr>
</tbody>
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Office of Human Resources
201 W. Colfax Ave. Dept. 412 | Denver, CO 80202
www.denvergov.org/humanresources

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Narrative for Recommendation 1.8

The Executive Director of the Office of Human Resources will ensure that OHR agency personnel are informed and educated on the COOP program. We will conduct testing of the alert and notification system procedures on an annual basis for continuity planning personnel. In addition, OHR will provide quarterly testing of such procedures for all agency personnel and document the outcome.

If you have any questions, please contact Rory McLuster at (720) 913-5672.

Sincerely,

Karen Niparko
Executive Director, OHR

cc: Valerie Walling, Deputy Auditor, CPA, CMC
    Kevin Sear, IT Audit Manager, CPA, CIA, CISA, CFE
    Shannon Kuhn, IT Audit Supervisor, CISA
    Chris Longshore, Director, Technology & Innovation, Office of Human Resources
    Rory McLuster, Deputy Director, Office of Human Resources