Metro

Emergency Management:

Strengthen basic elements to prepare for disasters

October 2018
A Report by the Office of the Auditor

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Metro

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MEMORANDUM

October 3, 2018

To: Tom Hughes, Council President
Shirley Craddick, Councilor, District 1
Betty Dominguez, Councilor, District 2
Craig Dirksen, Councilor, District 3
Kathryn Harrington, Councilor, District 4
Sam Chase, Councilor, District 5
Bob Stacey, Councilor, District 6

From: Brian Evans, Metro Auditor BE

Re: Audit of Emergency Preparedness

This report covers the audit of Metro's emergency preparedness. Jurisdictions like Metro are not required to have emergency management programs. They are allowed to develop programs according to their needs. Although Metro is not required to have an emergency management program, it has to be prepared to respond to emergencies and disasters that may affect its programs and services. Metro is also expected to play a regional role handling debris and household hazardous waste during a disaster.

We found Metro took an ad-hoc approach to managing the four emergencies we reviewed in this audit. Overall, Metro handled these incidents effectively, but our review found there were gaps in each of the basic elements of emergency management best practices. Because of the experience and initiative of Metro employees, the effects of missing the basic elements were relatively minor.

However, Metro's ability to respond to more severe emergencies or disasters may not be effective without a formal structure. Strengthening some basic elements of emergency management would better prepare the agency to respond. Metro approved a disaster debris management plan in August 2018 that covered some elements of emergency management for debris-generating emergencies.

We have discussed our findings and recommendations with Andrew Scott, DCOO; Scott Cruickshank, General Manager of Visitor Venues; Paul Slyman, Property and Environmental Services Director, and Rachel Coe, Information Services Director. A formal follow-up to this audit will be scheduled within three years. We would like to acknowledge and thank all of the employee who assisted us in completing this audit.

Summary

Emergency management is an approach used by both governments and businesses to deal with emergencies and disasters. Oregon law requires counties to have dedicated emergency managers and programs that meet certain requirements, such as developing an emergency operations plan. Jurisdictions like Metro are not required to have emergency management programs. They are allowed to develop programs according to their needs.

Metro has not developed a program or formal structure for emergency management that covers the agency as a whole. Though Metro would not be a first responder in a disaster, it is expected to have a role handling disaster debris and household hazardous waste. Metro recently developed a disaster debris management plan, which formalized this regional role and provided a structure for managing debris.

We found Metro took an ad-hoc approach to managing the four emergencies we reviewed in this audit. Although these emergencies involved multiple facilities, they could be considered less severe than what is described as multi-facility emergencies in Metro's emergency operations plan. As a result, they provide a good learning opportunity for what would be needed to respond effectively to a severe multi-facility emergency or disaster.

Organizations should have a formal structure and procedures to use during a disaster. These would include procedures for such things as managing funds, tracking costs, and emergency procedures related to personnel. Prior to a disaster, an organization should know what resources it has and ways it can obtain other resources when needed. An agency-wide continuity plan outlines essential agency functions and prioritizes the restoration of all other functions throughout the agency as resources allow. To be ready for a disaster, primary communication systems need to be backed up. There should also be documented internal and external communication procedures.

Our review found there were gaps in each of these basic elements. Because of the experience and initiative of Metro employees, the effects of missing the basic elements were relatively minor during the four incidents we reviewed. However, Metro's ability to respond to more severe emergencies or disasters may not be effective without a formal structure. We recommend Metro strengthen some basic elements of emergency management including:

- Clear roles, responsibilities, and authority
- Formal administrative procedures
- An inventory of emergency resources
- A continuity of operations plan
- Emergency communication procedures and technology

Background

Emergency management is an approach used by both governments and businesses to deal with emergencies and disasters. Before an incident, emergency managers create plans for how a government or an organization will respond if an emergency happens. If an incident does occur, emergency management responds to coordinate actions to protect lives and property. Emergency management also helps restore basic systems and return things to normal after the initial response.

Oregon law requires counties to have dedicated emergency managers and programs that meet certain requirements, such as developing an emergency operations plan. Such plans traditionally include emergency response policies, describe the organizational structure used to respond, and assign tasks. Emergency operations plans traditionally have appendices that describe more details for specific areas, such as debris management.

Another requirement is that counties use the National Incident Management System (NIMS) that includes the Incident Command System (ICS). ICS is a standardized management structure used for command, control, and coordination when an incident occurs. The counties in the Metro region have adopted NIMS and ICS.

Oregon law does not require other jurisdictions like Metro to have emergency management programs. They are allowed to develop programs according to their needs. Metro has not developed a program or formal structure for emergency management that covers the agency as a whole. A formal structure might be simple, such as having key responsibilities for aspects of emergency management being assigned to specific positions. Or, it could be a comprehensive program with dedicated emergency management personnel, training, and ongoing exercises to test and refine Metro's preparedness.

Though Metro would not be a first responder in a disaster, it is expected to have a role handling disaster debris and household hazardous waste. Metro recently developed a disaster debris management plan, which formalized this regional role and provided a structure for managing debris.

Some of the debris planning work has been informed through Metro's participation in a regional organization called the Regional Disaster Preparedness Organization (RDPO). A Metro employee chaired the disaster debris task force for RDPO. A Metro Councilor and another employee also participated in RDPO committees.

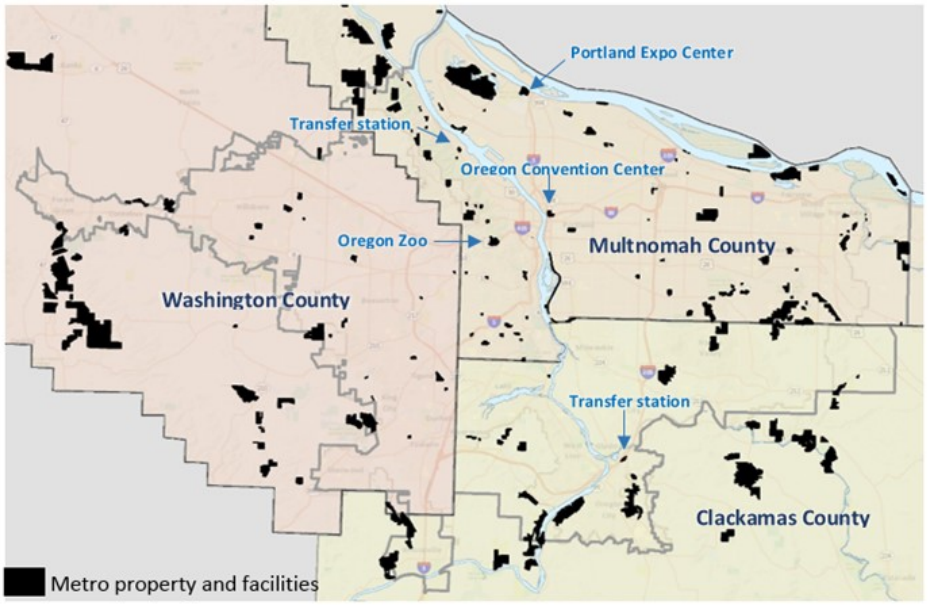
Metro does have an emergency operations plan. It was last updated in 2007. Some senior leaders and others at Metro were recently trained in ICS, though the agency has not formally adopted the federal system and ICS.

Metro's emergency operations plan identifies three levels of emergency. A level 1 emergency affects a single facility and is managed by that facility. A level 2 emergency affects more than one facility (multi-facility emergency) or

has actual or potentially severe consequences. An emergency with a severe impact on the community and Metro facilities, such as a major earthquake, is a level 3 emergency (disaster). Metro departments have developed policies and procedures to cover incidents primarily affecting single facilities, similar to a level 1 emergency.

Metro includes a variety of venues and facilities in three counties. The Oregon Zoo, Oregon Convention Center, Metro Regional Center, and Portland Expo Center are in Multnomah County. Metro also operates two solid waste transfer stations where solid waste is prepared for hauling to the landfill. One of these stations is in Clackamas County. Metro's Parks and Nature department manages parks and other facilities across all three counties. All of these facilities are subject to emergencies.

Exhibit 1 Metro property and facilities span three counties



Source: Metro Auditor's Office analysis based on Metro's Regional Land Information System data

In Oregon, local governments manage emergencies unless they require additional assistance. Counties play a central role for severe emergencies. If a city or other jurisdiction, like Metro, becomes overwhelmed in an emergency, it may ask the county for help. If a county is overwhelmed, the state may provide coordination or assistance.

If an incident is large or costly enough, the federal government may declare an emergency or disaster. In these cases, local governments, including Metro, may become eligible for reimbursement of their costs related to the incident. This reimbursement comes from the Federal Emergency Management Agency (FEMA).

The Metro region is prone to certain kinds of natural hazards, including floods and winter storms. Windstorms, wildfire, and landslides also affect the

region. Some of those hazards can have a major and/or widespread impact and be categorized as a disaster. And while infrequent, devastating earthquakes impact the region. Most notably, the Pacific Northwest is overdue for a large 9.0 magnitude earthquake referred to as the "Cascadia" earthquake. There are also risks posed by chemical spills, terrorist attacks, and pandemics. Five weather-related incidents in the Metro region since 2005 have resulted in federal declarations and reimbursement from FEMA.

Exhibit 2 There have been five weather-related federal disaster declarations in the Metro region since 2005

Year	Description	Metro Counties Affected	Total FEMA Reimbursement
2015	Severe Winter Storms, Straight-line Winds, Flooding, Landslides, and Mudslides	Clackamas, Multnomah and Washington	$24,627,876
2011	Severe Winter Storm, Flooding, Mudslides, and Landslides	Clackamas	$3,990,138
2008	Severe Winter Storm, Record and Near Record Snow, Landslides, and Mudslides	Clackamas, Multnomah and Washington	$10,887,119
2007	Severe Storms, Flooding, Landslides, and Mudslides	Washington County	$56,118,404
2005	Severe Storms, Flooding, Landslides, and Mudslides	Clackamas County	$7,631,753

Source: Metro Auditor's Office analysis of Federal Emergency Management Agency data

Results

We reviewed four recent incidents and found Metro's response was ad-hoc and did not cover many of the basic elements of emergency management. The impacts of the incidents were not very severe. Because of this, and because of the experience and initiative of Metro employees, the effects of missing the basic elements were relatively minor. We determined that Metro was able to respond well to these incidents overall.

However, Metro's ability to respond to more severe emergencies or disasters may not be effective without a formal structure. Reliance on informal procedures, and individual employees' initiative and experience, is unlikely to be sufficient during more serious incidents. Strengthening some basic elements of emergency management would better prepare the agency to respond.

Metro approved a disaster debris management plan in August 2018. This plan covered some basic elements of emergency management for debris-generating emergencies. It outlined roles and responsibilities. In signing the plan, Metro leaders also committed to developing procedures, identifying related resources, and supporting emergency communications for managing disaster debris.

Metro's approach lacked a formal structure

Metro's approach to emergency management lacked formality. Even though a regional government is not required to have an emergency management program, it has to be prepared to respond to emergencies and disasters that may affect its programs and services. Although Metro is not a first responder, it still has government functions that will need to be restored. In order to do this, Metro should have some basic elements of emergency management in place that include:

- Clear roles, responsibilities, and authority
- Formal administrative procedures
- An inventory of emergency resources
- A continuity of operations plan
- Emergency communication procedures and technology

Our review found there were gaps in each of these basic elements. Metro's approach to emergency management has gone through starts and stops over the years. In 2012, Metro participated in a business continuity effort, but business priorities were not selected. Metro initiated different projects to implement mass notification systems, but it was unclear whether an agency-wide solution would be adopted. Metro's emergency operations plan was outdated, unused, and it was unclear if the plan had been formally approved.

There was not a shared understanding among employees, leadership, and county emergency managers about what Metro's role in the region would be in a disaster. Some believed solid waste and disaster debris were the only things Metro would be responsible for following a disaster. Some thought Metro could be ready to provide other services, such as mass sheltering or

lending out employees to local jurisdictions. Since at least 1997, Metro had been defining and redefining its role in regional disaster debris management.

Metro made recent investments in emergency management. It hired a planner to specifically focus on managing disaster debris. A plan for managing disaster debris was approved in August 2018. Metro had also started to develop a continuity of operations plan for solid waste.

A handful of employees have taken initiative and have shown commitment to strengthen emergency management at Metro. It did not appear as if many of those duties were formally assigned. For example, Metro's Risk Manager developed a system to track and report information related to incidents and the impacts they have on Metro facilities, started to update the outdated emergency operations plan, and took on responsibility for the FEMA reimbursement process. Other employees provided ICS training and organized Metro's participation in Cascadia Rising—which included an exercise simulating a large earthquake and tsunami.

Case studies identify opportunities to prepare for more severe emergencies

We found Metro took an ad-hoc approach to managing the four emergencies we reviewed in this audit. Although these emergencies involved multiple facilities, they could be considered less severe than what is described as multi-facility emergencies in Metro's emergency operations plan. As a result, they provide a good learning opportunity for what would be needed to respond effectively to a severe multi-facility emergency or disaster.

Overall, Metro handled these incidents effectively. In most cases, the majority of impacts appeared mostly isolated to one facility or department. Departments restored operations on their own without Metro delegating responsibilities or prioritizing business operations between departments. We saw some use of ICS to outline roles, plan, coordinate resources, communicate, and monitor response and recovery. Department leaders were available to make decisions as needed, which lessened the need to delegate authority.

Phone and email were the primary forms of communication during these incidents, and there was not a need for a backup system because there was no widespread interruption of utilities. In all the cases we reviewed, we noted that employee experience and initiative filled in for some of the gaps we found in the basic elements of emergency management. Exhibit 3 summarizes what we found for the incidents we reviewed.

Exhibit 3 Metro relied on employee experience and initiative during recent incidents

Event	Roles & Authority	Procedures	Inventory & Resources	Continuity	Communication
MRC Flood	●	○	●	○	●
Eagle Creek Fire	○	○	○	○	●
January '17 Storm	●	○	○	○	●
December '15 Storm	○	○	○	○	○

● Incident management and employee experience & initiative

○ Employee experience & initiative

Source: Metro Auditor's Office analysis of documents and interviews related to incidents

Metro Regional Center Flood

A flood impacted three floors and the basement in Metro Regional Center (MRC) on November 24, 2016. The team of Metro employees responsible for managing the incident relocated over 120 employees and restored the building and workspaces from water damage in about two weeks. Some employees with damaged workspaces telecommuted, and some were relocated throughout MRC and the Oregon Convention Center (OCC). The Recycling Information Center (RIC) also had to be relocated and was reported as having some down time as the result of that move. Managing this incident was made a priority and internal services for technical support and facility maintenance requests were put on hold. Some employees reported that their participation in managing this incident put them behind in their own work by at least several weeks. Metro reported losses of about $760,000 for the incident, of which about $200,000 was reimbursed through insurance.

Source: Metro

Eagle Creek Fire

In September 2017, a fire started in the Columbia River Gorge about 20 miles from the Metro boundary. Because of the fire, Metro's Oxbow Park was evacuated and Blue Lake Park was closed due to air quality concerns. The fire resulted in a closure of Interstate 84 in both directions for several weeks, which was Metro's primary route to send solid waste to the landfill. This required Property and Environmental Services (PES) to make arrangements to use an alternative route to the landfill as well as use other landfills. PES calculated the additional transportation costs, higher landfill fees, and other costs to be nearly $500,000. Parks and Nature staff estimated at least $12,000 of gross revenue was lost because of park closures. The fire received a federal declaration and jurisdictions involved in controlling it were eligible to receive federal reimbursement. Two Metro employees helped for several days during the fire and Metro was reimbursed approximately $4,600 for their work.

Source: Curtis Perry/Flickr
(Creative Commons license: https://creativecommons.org/licenses/by-nc-sa/2.0/)

January 2017 Storm

In January 2017, the Metro region had nearly two weeks of heavy weather including ice, low temperatures, and near-historic snow levels. Several venues and facilities, including Metro's solid waste transfer stations, were closed or had cancellations. Interstate 84 was also closed for a few days, though the inflow of waste to the transfer stations was lessened since residential garbage collection was also delayed. Waste built up at the transfer stations after collection resumed, which reportedly took weeks to transport out. Two houses in Metro's Natural Areas were also damaged. Employees at several facilities worked to clear snow. Metro lost an estimated $100,000 in gross revenue from closures or cancellations. Metro also incurred roughly $33,000 to repair damage and remove snow. The state sought a federal declaration for this event, but FEMA denied it.

Source: Metro

December 2015 Storm

The region also experienced widespread storm impacts during December 2015, including flooding and heavy wind. The Oregon Zoo closed for two days and one of its buildings flooded, in part, from excessive runoff. Five employees who worked in that building were relocated. The entrance to Blue Lake Park flooded and two houses in Metro's natural areas were damaged. Contractors repaired damaged property. The Oregon Convention Center (OCC) provided a large indoor space for the American Red Cross to outfit disaster trailers. Metro lost an estimated $63,000 in gross revenue from the Zoo closure and total Metro property damage was at least $30,000. Two Metro counties received a federal declaration, and were eligible to receive FEMA reimbursement for response and recovery costs. Metro received just over $16,000 from FEMA for reimbursed repair costs.

Source: Oregon Zoo

Strengthen elements of emergency management for severe emergencies

Although the majority of the costs from the incidents we reviewed appeared unavoidable, and Metro handled them effectively, we saw opportunities for improvement. Metro needed a more formal structure to be prepared for severe multi-facility emergencies or disasters. The need for a more formal structure was also identified during disaster debris planning in 2015 and again in 2017. A right-sized approach for this structure should consider what Metro defines as its regional role during a disaster and what it prioritizes for recovering its operations during more severe emergencies.

Clarify roles, responsibilities and authority

Formal emergency management roles, responsibilities, and authorities will be important to effectively respond to more severe multi-facility emergencies or disasters. For the incidents we reviewed, we found employees generally understood what needed to be done and the necessary authority was in place. However, Metro's response to these incidents relied more on employee experience and initiative than a formal structure. This approach would not be effective in a severe multi-facility emergency or disaster.

Lack of clear roles, responsibility, and authority has the potential to lead to confusion, or inefficient and ineffective coordination. It also means that Metro would have to develop the management structure at a time when efforts should be focused on managing the emergency or disaster.

Some of the basic elements of emergency management we reviewed in this area included the identification of a point person with authority to make and carry out decisions. A point person could also be a representative to other government agencies or carry responsibility for agency-wide preparedness. Succession, delegation of authority, and a process to declare an emergency are other elements that could help provide more structure in this area.

The Incident Command System (ICS) is a common way to clarify roles, responsibilities and authorities during an emergency. Although ICS was used in some cases, it had not been formally adopted. ICS was initiated to monitor the 2017 storm. It was not used to coordinate assistance or resource sharing between departments for snow removal or de-icing operations. In the absence of pre-determined priorities, this could have helped Metro prioritize areas for snow removal.

For the Eagle Creek fire, Metro could have explored options that might have reduced the cost of having to reroute solid waste loads while I-84 was closed. When the westbound lanes of I-84 reopened, Metro could have negotiated a lower rate for transportation to the landfill or worked with emergency managers to determine if it was appropriate to bypass transportation rules to allow haulers to work longer hours.

For the MRC flood, ICS was initiated and the management structure changed between the initial response and recovery efforts. Major decisions were discussed collectively, and some managing the incident had overlapping

or multiple roles. Some employee feedback showed confusion and concern about conflicting information, but overall there were positive opinions about how this incident was managed.

A report debriefing the MRC flood identified opportunities to improve Metro's use of ICS. A report after the 2016 Cascadia exercise noted that participants felt they were falling into pre-existing organizational structures to address the response instead of using ICS. This had the potential to duplicate efforts and restrict information flow. The need for more training and experience using ICS was also identified in the report. As part of the August 2018 Disaster Debris Management Plan, Metro established an ICS structure and committed to additional training for those responsible in managing emergencies. However, this plan applied specifically to debris-generating emergencies and disasters.

Procedures were informal

Organizations should have formal procedures to use during a disaster. These would include procedures for such things as managing funds in an emergency, tracking costs, and emergency procedures related to personnel. Some formal administrative procedures were not in place at Metro that would facilitate an efficient response to a disaster.

Several procedures were not in writing. During a disaster, this could mean they may need to be developed, which would take time. For instance, Metro would need a way to pay employees if certain information systems were unavailable. Metro may also need to develop a procedure to request resources or assistance from county emergency managers. Having an updated and formally-adopted emergency operations plan could help ensure consistency in incident management. Metro recently committed to developing procedures for managing disaster debris.

A lack of written procedures could be problematic in a disaster. It is important to have procedures to guard against fraud, waste, and abuse during a disaster. Processes developed during a time of heightened stress may not be as well-designed, which increases risk. Without formal procedures, Metro is also heavily reliant on institutional knowledge. This means that employee turnover, or the absence of an employee during an emergency, could also have a negative effect on Metro's response.

Generally, this approach did not prevent Metro from effectively responding to the incidents, though it may have cost Metro more than needed. In the case of the December 2015 storm, an employee took initiative to submit a reimbursement request from FEMA, though this work was not formally assigned. Metro received just over $16,000 in reimbursement, but missed including about $7,000 worth of repair costs that were likely reimbursable. During the MRC flood, tracking of damaged items was ad-hoc. Re-routed loads of solid waste during the Eagle Creek fire cost nearly double the normal rate, but Metro did not have a way to verify if the alternative route was taken after I-84 westbound reopened.

We noted other minor delays or incomplete processes. For instance, Metro submitted incomplete damage and cost information after the deadlines set by county emergency managers in both the December 2015 and January 2017 storms. FEMA will only reimburse disaster-related costs if they reach a certain threshold. Governments need to provide complete information so they all have the best possible chance to get a FEMA declaration and become eligible for federal disaster funds.

Other processes also lacked written guidance, including the initiation of ICS or the use of other components of incident management. The components of incident command that Metro used during the incidents we reviewed varied. Without written guidance, it was unclear which components may have been required and which components were optional.

Components of incident management include ICS, situation reports, and incident action plans. Information about recent activities during an incident were detailed in situation reports. Incident action plans described the objectives, tactics, and assignments used to manage an incident.

Metro appeared to use ICS mostly to monitor conditions during the January 2017 storm. It may not have been necessary to develop incident action plans. However, each multi-facility emergency gives Metro an opportunity to practice using parts of incident management that may be needed in a disaster.

Exhibit 4 Elements of incident management varied

	Situation Reports	ICS	Incident Action Plans
MRC Flood	✓	✓	✓
Eagle Creek Fire	✓		
January '17 Storm	✓	✓	
December '15 Storm			

Source: Metro Auditor's Office analysis of documents and interviews related to incidents.

Documenting the process to initiate ICS and use other elements of incident command could be done in an emergency operations plan. For instance, the 2007 plan outlined a process for activating a crisis management team. However, the plan had no procedures for situation reports. It was also viewed as outdated and was not used to manage the incidents we reviewed.

Identify resources prior to a disaster

Prior to a disaster, an organization should know what resources it has and ways it can obtain other resources when needed. This includes an inventory of physical and employee resources. It also includes mutual aid agreements or contracts that could be used during an emergency. Metro lacked such an inventory, but it had procured some contracts and agreements that it used during the incidents we reviewed.

A more comprehensive understanding of resources would benefit Metro. Metro's 2007 emergency operations plan included a partial list of equipment and emergency supplies. However, the list was considered outdated and did not include some equipment. We were told that Metro had an inventory that included heavy equipment and vehicles, though it did not appear to have been used during recent incidents.

Things such as heavy equipment, generators, and deicer could be useful in a disaster. Having a list of employees with special training related to such things as emergency management, post-earthquake building inspection or water remediation could also be useful. Depending on the incident, Metro may have a need for such resources. Without an updated inventory, response and recovery work would be delayed while employees try to locate them.

Prior to the incidents we reviewed, Metro procured services that likely saved time. During three of the incidents we reviewed, Metro used a 24-hour on-call property restoration contractor, which likely resulted in a faster response time. Metro also had an intergovernmental agreement (IGA) in place that it later determined it could use to get reimbursed for work done during the Eagle Creek Fire. The IGA was set up to allow sharing of resources among governments in Oregon.

Although Metro had these resources in place, we noted minor delays or inefficiencies because resources were not known or secured ahead of time. Metro facilities ran out of deicer during the January 2017 storm and made efforts to locate that resource. It took the involvement of three departments to move snow-clearing equipment to assist the Portland Expo Center. Finally, instead of Metro equipment, personal items such as radios and flashlights were used during the initial response to the MRC flood.

At the time of our audit, Metro was in the process of putting other resources in place. For instance, it was managing a process where departments could set up their own snow removal contracts, which would facilitate quicker snow removal. It was also considering a federal purchasing program that would facilitate getting resources during a disaster.

Develop an agency-wide continuity plan

Metro did not have an agency-wide continuity of operations plan. An agency -wide plan outlines essential agency functions and prioritizes the restoration of all other functions throughout the agency as resources allow. In the absence of such a plan, previous and current efforts could be used as a starting place for developing one.

Without a continuity plan, Metro would have to make critical decisions about limited resources among competing priorities during a time of stress. For example, local emergency managers and Metro leaders noted the Planning and Development department and the Research Center would be valuable assets after an emergency or disaster. However, it's not clear how those departments would be prioritized for recovery among others.

Metro started, but did not finish, some agency-wide continuity planning in 2012. We were told this was not finished because priorities were not effectively set. At the time of our audit, Metro was involved in a new effort to develop a continuity plan specifically for solid waste. The intent was to eventually expand those efforts to supporting functions, such as those under the Finance and Regulatory Services department. It will be important for Metro to follow through on those efforts and apply them to the rest of the agency after determining and assigning agency-wide priorities.

A lack of an agency-wide continuity plan did not appear to have a major impact on the incidents we reviewed. However, elements of continuity planning may have reduced some impacts. For example, some employees impacted by the MRC flood had difficulty accessing necessary equipment, networks, and software to perform their jobs and there were some initial challenges as the Recycling Information Center (RIC) restored its operations. A plan to restore the RIC could have been in place and practiced ahead of time if it was identified as an essential agency function in a continuity plan. The Zoo completed winter weather planning that included where to prioritize snow removal, but such prioritization did not take place agency-wide. This could have made recovery from the January 17 storm more efficient, as employees noted a lack of prioritization for snow removal during that incident.

Backup communication systems needed

Organizations use communication technology and procedures to respond to emergencies. To be ready for a disaster, primary communication systems need to be backed up. There should also be documented internal and external communication procedures. Metro's communication technology and procedures were sufficient for recent incidents, but they may not be as effective during a disaster. Employees primarily used phones, email, and often situation reports to communicate during the incidents we reviewed. Metro did not need to rely on backup technologies during the incidents we reviewed.

There were only minor issues with Metro's communications during recent incidents. For instance, there were some inconsistencies and incomplete information in situation reports. There was also inconsistency with which employee played a lead role communicating with local emergency managers during the December and January storms. During the MRC flood, initial notification of employees was inefficient because Metro lacked an adequate system for notifying employees outside of work email or desk phones. However, it was still successful in contacting nearly all impacted employees over a holiday weekend.

The lack of a mass notification system is one technical limitation that could be problematic in a disaster. Also, in a case involving an extended power outage or widespread interruption of other utilities, Metro facilities may be unable to communicate with each other because facilities lack a backup means of communicating, such as interoperable radios or satellite phones. A failure of phones and email would contribute to confusion and delays in response and recovery operations.

Metro may also need to better document communication procedures to be prepared for a disaster. Communications during a disaster may need to be carefully coordinated with local emergency managers, particularly if Metro is involved in communicating with the public.

Recommendations

To strengthen its regional role during a disaster, Metro should:

1. Complete appendices outlined in the Disaster Debris Management Plan
2. Specify what, if any, additional roles Metro intends to fulfill during a disaster

To prepare for severe emergencies and disasters, Metro should:

3. Clarify roles, responsibilities, and authority by:
    a. Determining which elements of NIMS, including ICS, it will use and formally adopt them.
    b. Formally approving an agency-wide emergency operations plan
    c. Assigning responsibility to specific position(s) for maintaining the emergency operations plan and procedures
    d. Providing training and exercises for the employees who will be involved in response and recovery operations
4. Formalize emergency procedures by developing written agency-wide procedures, at a minimum, for:
    a. Tracking and reporting emergency-related damage and costs
    b. Manual payroll and vendor payment processes for when normal systems are unavailable
5. Maintain an up-to-date inventory of emergency resources
6. Plan for continuity of operations by:
    a. Finishing current continuity planning efforts for solid waste and supporting functions
    b. Planning for other essential and remaining agency functions
7. Improve emergency communication by:
    a. Developing a back-up emergency communications system
    b. Implementing a notification system(s) that reaches all Metro employees

Scope and methodology

This audit evaluated Metro's approach to emergency management. The objective was to determine which elements of emergency management could better prepare Metro in its role as a regional government. The audit scope included Metro's response to emergencies in the past five years.

To plan the audit, we reviewed state law and Metro Charter related to emergency management. We interviewed county and other local emergency managers and Metro employees involved in aspects of emergency management. We reviewed emergency management standards, best practices for emergency management and business continuity, and other local emergency management plans. We also reviewed Metro's plans and reports about emergency management. We then developed a set of basic elements of emergency management applicable to a regional government.

For the audit, we determined the extent to which those elements were in place at Metro. Using interviews, risk management data, incident reports, and information from FEMA, we assembled a list of about 16 possible emergency incidents affecting Metro in the past five years. We used a case study approach for the audit focused on four incidents.

Our selection was made using professional judgment considering the following factors: if an incident appeared to affect more than one Metro department, was mentioned in interviews, if property damage or other documented financial impacts were associated with the incident; and if the event appeared to coincide with a FEMA declaration for one or more Metro-area counties. Metro's approach to emergency management changed over time and there was a wide diversity among the list of all possible emergency incidents we compiled. Accordingly, what we found for the cases studies may not apply to all incidents from out list.

We reviewed how Metro responded to each of these incidents and the extent to which the absence of basic elements had an impact on Metro. To do this, we interviewed Metro employees involved in response or recovery efforts, or were impacted by the incidents. We reviewed communications, reports, contracts, and financial data. We also interviewed local emergency managers for some of the incidents.

This audit was included in the FY 2017-2018 audit schedule. We conducted this performance audit 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.

Management response

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Date: September 28, 2018
To: Brian Evans, Metro Auditor

From: Martha Bennett, Chief Operating Officer
Andrew Scott, Deputy Chief Operating Officer
Scott Cruickshank, General Manager, Metro Visitor Venues
Paul Slyman, Director, Property and Environmental Services

Subject: Management Response Emergency Management Audit Report

Thank you for the opportunity to respond to the audit of emergency management practices at Metro. Ensuring continuity of service to the greater Portland community, and the safety and protection of Metro employees, customers, and zoo animals in the event of an emergency is critically important.

Background
As you indicated, Metro is not a first responder, nor is Metro required to have an emergency management program. However, your analysis of Metro's emergency preparedness, and particularly your examination of four case studies, underscores the importance of preparing for local and regional emergencies.

Management agrees with the overall message of the audit. However, the recommendations are quite specific. To respond, management intends to create a comprehensive plan to implement changes based on the audit's recommendations and other needs that are not included in the audit.

Recommendation 1:
Management agrees with this recommendation. Metro recently approved a disaster debris management plan. The appendices will be developed as planned. Multiple Metro departments will be involved during the next 24 months to complete the appendices as part of our overall disaster debris management work.

Recommendations 2, 3a-3d, 5, 6b
Management agrees with the overall recommendation to create an emergency plan. Management will convene an internal emergency management task force consisting of representatives from relevant departments and venues to better evaluate Metro's role in this area.

During the next 18 months, the task force will develop a strategy for addressing the audit recommendations and clarifying Metro's role in emergency management. Depending on the outcome, the task force may prepare a budget request for personnel and resources to address the recommendations related to crisis planning, management and response. The task force also will provide recommendations for undertaking additional actions necessary for developing a comprehensive agency plan.

The task force will focus initially on identifying additional roles Metro might need to fulfill during a disaster (2). Metro will work with partner governments, and other relevant stakeholders to better understand their expectations of Metro in a disaster, and to inform them about Metro's resources and capabilities.

Understanding possible additional disaster-related roles for Metro is key to ensuring the highest priority actions are undertaken first, including actions that may not be considered by the scope of the audit recommendations. In addition, the task force also will determine the best way to adopt and apply the National Incident Management System (3a) to Metro, and to ensure a revised Emergency Operations Plan (3b) addresses the roles, frequency and types of training and exercises (3d) needed to maintain competency for staff. The task force will provide a scope of work recommendation related to continuity of operations (6b) needed for the determined roles and applicable departments and the number and types of resources that would need to be included in an inventory (5).

Once the task force defines the scope, it will review current staff (3c), contract, and physical resources for implementation, and request additional resources as needed. The task force will issue a report no later than March 2020 outlining its work and future recommendations.

Recommendations 4a and 4b:
Metro's Finance Department will formalize existing procedures to track and report emergency related damage and costs during the next year.

Similarly, Finance will continue investigating manual payroll and vendor payment processes for use when normal systems are unavailable. Finance also will create an implementation plan in the next 12 months, resources permitting.

Recommendation 6a:
As the audit points out, Property and Environmental Services has embarked on business continuity planning for its operational facilities. Phase 1 of continuity planning (6a) will be complete by the end of the 2018 calendar year. The work will create a final report with recommendations and a process appraisal to share with other Metro Departments. Based on the final recommendations, PES will consider proposing a budget request for personnel to maintain, test, and improve the solid waste operations continuity plan, including leading a Business Impact Analysis.

Recommendation 7a and 7b:
Information Services is working to expand Metro's emergency communications capabilities (7a). Currently Metro participates in the federal government's Government Emergency Telecommunications Service (GETS). GETS allows agencies to receive priority in landline and cellular use during an emergency. Using the results of the emergency management task force, Information Services will work with other departments to ensure the appropriate Metro staff have access to GETS. There also is a review of Metro's radio systems underway, and Information Services will propose a project to connect these systems to ensure connectivity among appropriate Metro facilities and staff. The Oregon Convention Center and Information Services will pilot a system for mass notification (7b) that could be used for Metro staff. This system is identified and planned to be budgeted for FY 2020. If successful, Metro will expand the system agency-wide.

Overall, management agrees that Metro should have a formal structure and procedures to use during a disaster, as outlined in your audit. We appreciate your analysis of Metro's emergency management capabilities and the recommendations you provided.

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