



YOUR EMERGENCY LOGISTICS SPECIALISTS

Research Project Measuring Municipalities' of Ontario Level of Emergency Logistics Preparedness

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Executive Summary

The purpose of this research was to determine the level of preparedness of Municipalities of Eastern Ontario to respond to an emergency or disaster in their community. The research was focused on emergency logistics.

The goal was to quantify the level of preparedness, identify areas needing improvement, establish a baseline of where Ontario municipalities sit in terms of level of preparedness and identify recommendations to improve upon the baseline.

The research was based on 4 hypotheses:

1. The hypothesis was that the vast majority of the municipalities were insufficiently prepared and/or not prepared at all, in relation to emergency logistics. The research supports this hypothesis.

Initial perception of CEMCs showed that over 83% felt that they were sufficiently prepared for an emergency or disaster in their community. However, when asked to quantify their opinions in relation to emergency logistics, the results showed that approximately 70% of CEMCs felt a need for more planning and preparation.

2. It was hypothesized that the majority of Ontario municipalities lack pre-arranged supplier agreements. The research supported this hypothesis.

3. It was hypothesized that most municipalities would have in place a list of goods and services to support emergency management staff during an emergency, but the list would focus on suppliers who can provide support in areas of infrastructure projects and not evacuation shelters or reception shelters. Research project supported this hypothesis.

4. It was hypothesized that most municipalities would fail to test their supply chain during annual exercises. Research project supported this hypothesis.

Introduction to the survey research

The Deer Lake First Nation Forest Fire evacuation in 2011 resulted in 640 Stage 1 Evacuees set-up in a defunct mental health facility in the Town of Smiths Falls for a period of 14 days.

This evacuation operation required a small army of staff and volunteers to acquire goods and services in advance of the arrival of the evacuees, as well as provide ongoing support for the duration of the evacuation.

One area highlighted in the after-action report that required improvement was the development of a database of goods and services linked to pre-qualified suppliers. This need has been identified in other recent evacuations involving other municipalities across Ontario, such as North Bay floods (2012), and First Nation Flood victims evacuated to Cornwall (2013).

From further discussions with Emergency Management Ontario (EMO) field officers and logistics team, as well as with non-profit organizations, such as Red Cross, it was determined that the lack of logistical preparation is wide-spread across Ontario municipalities, and not unique to these communities.

This survey was designed to highlight how far reaching the lack of logistical awareness and preparation exists and to set a baseline for Ontario Municipalities to become better prepared for an emergency or disaster occurring in their community.

Research objectives

The research project examined the following categories:

- a. Measure the overall perception of municipal Community Emergency Management Co-ordinators' state of emergency preparedness in the event of an emergency or disaster occurs within their community.

The objective of this section of the research project was to establish a baseline for the level of preparedness that the CEMC perceived its community was at.

- b. Identify the qualifications of the emergency management team, in terms of training in emergency management and supply chain management.

The objective of this section was to identify if the level of preparedness was related to the level of training that the emergency management team has received, or if the level of preparedness was related to the mind-set of the organization.

- c. Identify the level of funding that is allocated in the annual budget towards emergency preparedness and whether it is sufficient to meet the needs of mitigating the risks of emergencies within the community.

The objective of this section was to identify if the level of funding was related to the level of preparedness.

- d. Identify the risks within the community that can affect the supply chain during an emergency or disaster within the community.

The first objective of this section was to identify whether the emergency management team had identified potential risks to the supply chain during an emergency or disaster within their community.

The second objective of this section was to identify the level of experience of the emergency management team with disasters and/or emergencies within their community, and whether the level of experience was related to the level of preparedness. It also measures whether the risks identified are taken into account during actual emergencies.

- e. Actions taken prior to an emergency or disaster to ensure an effective response. In particular, this section deals with the level of planning and preparation within the community in regards to supply chain emergency management.

The objective of this section is to identify whether the emergency management team has identified in their emergency plans logistic planning. It also identifies any gaps in logistics plans; such as identification of goods and services, identification of pre-qualified vendors, templates for acquisitioning, receiving and issuing goods and services; and roles and responsibilities of the logistics team.

- f. Identify the actions that occur during an emergency or disaster to ensure an effective response. In particular, this section deals with the level of response in regards to emergency supply chain management.

The objective of this section is to identify gaps in the ability to execute emergency plans in relation to emergency logistics.

- g. Identify the recovery actions during an emergency or disaster to ensure an effective response. In particular, this section deals with the recovery steps that deals with emergency supply chain management.

The objective of this section is to identify gaps in the Recovery Phase in relation to emergency logistics.

- h. Identify the areas for improvement, with regards to the supply chain, after the emergency has ended.

The objective of this section is to identify gaps in the post-evaluation of an emergency response.

- i. Re-measure the overall perception of the state of preparedness in the event of an emergency or disaster occurring within the community after completing the survey.

The objective of this section is for the CEMC to re-evaluate their assessment of their level of preparedness after taking the survey. Does the survey identify areas of weakness in the level of preparedness and if so, what actions does the CEMC expect to take to rectify any gaps identified.

The overall expected result is that the CEMC's will either maintain their current perception of their state of preparedness or decrease their level of preparedness.

Data collection process

The survey was designed for participants to complete it on-line, through the use of SurveyMonkey.

CEMC's and their alternates, as well as Chief Administrative Officers (CAOs)/City Managers from municipalities across Ontario were invited to participate in an on-line survey. A total of five (5) CAOs, four (4) Treasurers and twelve (12) CEMCs were identified as participants of this research project. The remaining 11 participants did not provide information on their role and responsibility.

Two separate mass email invitations were sent out (May and September). Participants, who did not respond in the first mass email (200), were re-invited to participate (190 invitations). A total of 32 participants participated in the on-line survey.

Emergency Management Ontario (EMO) field officers were also asked to invite DOCK24 Inc. to their sector meeting(s) to promote the research project and invite participants to complete the on-line survey. One field officer invited DOCK24 Inc. to its sector meeting, and other field officer sent out emails to her sector inviting participants directly.

The data collected was stored in SurveyMonkey database for further analysis by DOCK24 Inc.

Findings

A. Perception of CEMCs Level of Preparedness

Initial hypothesis was that smaller municipalities, with reduce staff and funding would be less prepared when compared to larger urban centres. What was surprising from the results was that the larger municipalities listed that they needed more planning and preparation. Municipalities in excess of 30,000 residents stated that more planning and preparation were needed, when compared to municipalities with populations less than 30,000 residents.

It was expected that the initial perception of CEMCs would indicate that they were sufficiently prepared for an emergency or disaster within their community. The hypothesis of this research is that the majority of CEMCs would downgrade their level of preparation after completing the survey.

The results of the survey concur with this hypothesis:

How would you classify your overall state of preparedness in the event that an emergency or disaster occurs within your community?	Initial Response	Revised Response
Very prepared	16.13%	6.25%
Sufficiently Prepared	67.74%	25%
Need more planning and preparation	16.13%	50%
We are not prepared	0%	18.75%

The initial reply to the level of preparedness was based on the emergency plans currently in place and the annual exercises that municipalities host. This is further supported by 87.10% of municipalities allowing public access to their emergency plan(s), and of this 93.55% have access to their plans when there is a power failure.

70.97% of responders indicated that they have agreements with external agencies. Examples of external agencies include: non-profit organizations, such as Red Cross, St. John Ambulance, Salvation Army, Legion, Civitian Club, ARES, United Way, and government agencies, such as higher tier municipalities, MNR, MOE, EMO, school boards, hospitals, Canadian Armed Forces, and nongovernment agencies, such as Hydro and Nuclear Committee.

However, when CEMCs were asked to quantify their level of preparedness in relation to emergency logistics, their perception on their level of preparedness reduced significantly.

B. Qualifications of Emergency Management Team

This section covers the assignment of roles and responsibilities of the emergency management team, as well as their qualifications.

It is hypothesized that the level of preparedness is directly linked to the level of training and qualifications of the emergency management team.

The results were surprising in that key positions during an emergency response, such as warden's, CAO, and CEMC, approximately half (1/2) of the respondents indicated that alternates have not been identified. Also surprising was that key supporting roles, such as coroners, mass transit, procurement and information technology were not identified or known by CEMCs, whether as primary or alternates.

The level of success of responding to an emergency is dependent on the training and knowledge of each person filling a role within the emergency management team. This was evident during the Deer Lake First Nation Forest Fire evaluation. For the initial 72 hours of the emergency, Lanark County emergency management team consisted of 80% of Alternates due to key staff on vacation and/or unavailable. The level of response could have potentially resulted in a different outcome, had the alternates not be previously identified and trained. From these survey results, it is recommended that municipalities identify alternates for the emergency management team.

Other surprising results was the lack of training of key staff involved in the response to an emergency or disaster, such as Social Services, finance and procurement, and CAO's. The following table outlines the completed emergency management training by position:

Position	BEM	CEMC	IC	DR	MC	EX	Unknown
CAO	57.89%	36.84%	21.05%	10.53%	0%	26.32%	15.79%
Emergency Mgr	63.19%	95.74%	52.63%	42.11%	36.84%	57.89%	0%
Facility Mgr	43.75%	0%	12.50%	6.25%	0%	18.75%	43.75%
Dir. Soc. Svcs	33.33%	0%	6.67%	6.67%	6.67%	13.33%	60%
Treasurer	43.75%	0%	6.25%	6.25%	0%	18.75%	50%
Purchasing	35.71%	0%	7.14%	7.14%	0%	14.29%	64.29%

Legend: BEM – Basic Emergency Management; CEMC – Certified Emergency Management Coordinator; IC – Incident Command; DR – Disaster Recovery; MC – Mass Casualty; EX – Exercises.

Part of the role and responsibility of the CEMC is to ensure that staff receives the proper training in emergency management. However, as demonstrated in the table above, a high percentage of CEMC's lack the knowledge of what training staff has received to date.

The role of acquisitioning goods and services is critical during an emergency or disaster. The ability to source goods and services quickly, efficiently and keep costs to a minimum is paramount. However, over 80% of CEMC's were not familiar with the skill set of designated primary staff in the capacity of Finance and Procurement and if additional training was required.

The lack of access to training in this area was cited as the most likely reason for staff not being trained in emergency logistics and supply chain management.

Reason	Highly likely	Most likely	Somewhat likely	Not likely
Lack of awareness	15%	40%	25%	20%
Lack of access to training	35%	35%	15%	15%
Lack of funding	45%	10%	10%	35%
Lack of time to attend training	40%	5%	30%	25%

An additional reason for not attending training was that staff did not see a need for training in emergency logistics.

C. Funding Allocation

The two hypothesis in relation to funding are: (1) two areas requiring additional funding will be Recovery Phase and emergency logistics and procurement; and (2) funding levels is related to the level of planning and preparation: the greater the funding, the greater the level of planning and preparation.

Level of Funding	Training in Mitigation	Training in Planning and Preparation	Training in Implementation of Plans and Exercises	Training in Recovery Phase	Networking Events, Conferences	Training in Emergency Logistics and Procurement
Above Average	10%	15%	15%	15%	15%	5%
Average	45%	45%	55%	50%	45%	40%
Below Average	30%	35%	25%	5%	25%	20%
No funding	15%	5%	5%	30%	15%	35%

The training areas which require additional funding is Recovery Phase and Emergency Logistics and Procurement. Recovery Phase is one of the most neglected areas in emergency management. Emergency Management teams tend to focus on the stages leading up to and responding to an emergency or disaster.

However, they fail to put in place plans on how to manage the recovery phase. This is indicative of the funding allocated to this phase.

It was also hypothesized that funding allocated to emergency logistics and procurement would also be low. The table above shows that 55% of funding allocation is below other areas of emergency management training topics. This is further supported by the previous survey section where training is a low priority in this area of emergency management.

D. Risks that affect the Supply Chain during an Emergency

It is hypothesized that a vast majority of municipalities have failed to identify risks to the supply chain during an emergency or disaster has not been identified and mitigated. One reason to support this hypothesis is that the majority of communities have experienced a large scale emergency or disaster that required the activation of emergency shelters.

This hypothesis is false because 61% have indicated that they have identified risks that can affect their supply chain during an emergency or disaster – even though over 70% of respondents indicated that they have not experienced a natural, man-made or terrorism emergency or disaster in their community.

The greatest risk identified was that local suppliers would be equally affected by the emergency or disaster in the community.

Respondents have indicated that they have identified suppliers within their supply chain that can support the nine (9) Ontario Critical Infrastructure sectors as follows:

Infrastructure Sector	Yes	No	Unknown
Food and Water	66.67%	11.11%	22.22%
Electricity	55.56%	16.67%	27.78%
Gas and Oil, including Fuel	61.11%	16.67%	22.22%
Transportation	72.22%	5.56%	22.22%
Health Care	66.67%	5.56%	27.78%
Communication Systems	61.11%	16.67%	22.22%
Financial Institutions	55.56%	16.67%	27.78%
Public Safety and Security	72.22%	5.56%	22.22%
Continuity of Government	66.67%	11.11%	22.22%

The areas in which suppliers were poorly identified were in the sectors electricity and financial institutions.

E. *Planning and Preparation*

It is hypothesized that majority of municipalities have not:

- identified key logistical support staff required for the set-up and running of evacuation shelters and/or providing support to response efforts
- tested their vendor base or supply chain during annual exercises

The majority of respondents to the survey (70.59%) indicated that they lack an emergency plan specific for the Finance Department that includes templates and processes for requisitioning, acquiring, receiving, issuing, returning goods and services during an emergency or disaster in their community. The tracking of spending authorities and ability to audit the expenditures after the emergency has ended is critical.

Areas that need improvement in the development of emergency plans is the identification of the following roles and responsibilities of the logistics support staff during an emergency: Food Services Manager; Accommodation Manager; Clothing Manager; Waste Management Manager; Personal Services Manager.

Although municipal procurement by-laws indicate spending limits during an emergency, these limits are not clearly indicated in terms of how the limits are applied: spending authority; per contract, per day, per evacuation shelter, etc.

Another area which needs improvement is the involvement of the vendor community. This can occur by inviting them to participate in annual exercises. The following table indicates the commodity groups which are invited to participate in annual exercises:

Commodity Type	% of Municipalities
We never invite vendors to participate in our exercises	58.82%
General retail	17.65%
Provision of bedding (cots, air mattresses, playpens)	23.53%
Provision of linens (blankets, sheets, pillows, towels)	23.53%
Baby supplies (diapers, baby food, strollers)	11.76%
Office supplies (stationery, IT eqpt, office eqpt (copier, fax)	11.76%
Generators and alternate power sources	23.53%
Heavy construction equipment	29.41%
Medical supplies	17.65%
Provision of kitchen and dining room equipment, tools and furniture/fixtures	11.76%
Fuel	23.53%
Catering Services	17.65%
Security Services	23.53%
Janitorial Services	11.76%

Communication Services	17.65%
Transportation Services	17.65%
Pharmaceutical Services	5.88%
Provision of portable toilets and showers	17.65%
Waste Management Services	17.65%
Maintenance contractors (electrical, plumbing, HVAC)	11.76%

Although communities have identified risks to their supply chain, they 47% indicated that they never tested these risks during an annual exercise. Only 29% indicated that they sometimes test these risks.

F. Response Levels of Supply Chain during an Emergency

It is hypothesized that the majority of municipalities have not:

- identified a list of goods and services needed to support reception and/or evacuation shelters
- created forms and templates for the management of requisitions, acquisition, receipt, issuance, and distribution of goods and services

The following table indicates that the majority of municipalities have identified services needed to support an evacuation and/or reception centre. Areas that need improvement are the development of processes for managing the goods and services from initial requests to distribution.

Activity	Yes	No	Unknown
Have you identified list of goods and services required for the set-up and run Reception Centres?	81.25%	12.50%	6.25%
Have you identified list of goods and services required to set-up and run Evacuation Shelters?	75%	18.75%	6.25%
Have you identified limitations to receive shipments at your evacuation shelters (i.e. loading docks)	37.50%	62.50%	0%
Do you have a database of pre-qualified suppliers of goods and services to provide sustainable and scalable support during an emergency or disaster?	56.25%	43.75%	0%
Have you developed processes for receiving purchased goods and services?	50%	50%	0%

Activity	Yes	No	Unknown
Have you developed processes for receiving leased goods and services?	46.67%	53.33%	0%
Have you developed processes for receiving borrowed goods and services?	43.75%	56.25%	0%
Have you developed processes for receiving donated goods and services?	33.33%	66.67%	0%
Have you developed templates for managing incoming and outgoing durable and consumable goods from the warehouse?	18.75%	81.25%	0%
Have you developed processes/templates for tracking serialized items used during an emergency?	18.75%	81.25%	0%
Have you developed a log to track decisions and actions of logistics/procurement staff during an emergency?	37.50%	50%	12.50%
Are you processes flexible and adaptable to allow for lack of power and still allow for sourcing and receiving of incoming goods and services (fax, email, internet is not operational)?	81.25%	12.50%	6.25%
Have you identified how you will manage multiple evacuation shelters with relation of distribution of goods and services amongst the shelters during an emergency?	31.25%	56.25%	12.50%
Have you created a checklist identifying the initial steps to be completed prior to the acquisition of any goods and services during the initial 72 hours of any emergency or disaster?	43.75%	56.25%	0%
Does your emergency plan include logistics plans for different scenarios/disasters (i.e. evacuation vs non-evacuation scenario)	31.25%	62.50%	6.25%

G. *Recovery Plan*

It is hypothesized that the majority of municipalities will perform poorly in relation to drafting a Recovery Plan and/or implementing the plan. It is expected that the same municipalities have not considered a separate recovery management team from the initial response emergency management team. It is also expected that municipalities will lack processes for returning goods at the end of the emergency, and that administrative processes will not allow for ease of auditing of expenditures at the end of the emergency.

The data supports this hypothesis.

Activity	Yes	No	Unknown
Have you created a Recovery Plan that formalizes the arrangements for the effective recovery process of returning durable goods to stores in a fully operational state for the next emergency?	18.75%	68.75%	12.50%
Have you identified a separate Recovery Management Team from the initial Response Management Team that would be responsible for implementing the Recovery Plan?	6.25%	87.50%	6.25%
Have you identified suppliers who can assist in the recovery phase of an emergency?	25%	68.75%	6.25%
Do you have in place processes to identify borrowed durable goods so they can be returned clean and ready to use for the next emergency?	37.50%	62.50%	0%
Do you have a policy in place for the disposal of durable and consumable goods at the end of the emergency?	18.75%	75%	6.25%
Have you identified funding requirements for the recovery phase, with regards to emergency logistics and procurement?	12.50%	68.75%	18.75%
Do you have processes in place for reconciling outstanding invoices incurred during the response and recovery phases of an emergency?	37.50%	37.50%	25%
Are your processes and controls sufficient for monitoring and justifying spending during an emergency in the event that an audit occurs?	37.50%	31.25%	31.25%

H. *After Action Reporting*

It is hypothesized that the majority of municipalities do not involved their vendor community in providing feedback on how they managed the supplier/municipality relationship during the emergency. This is supported by the data.

Activity	Yes	No	Unknown
As part of your review process, do you request your suppliers to provide feedback on how to improve your overall supply chain process during an emergency or disaster?	18.75%	62.50%	18.75%
Do you include a debrief session with your supplier community after an emergency has ended?	18.75%	62.50%	18.75%

Municipalities that provide debrief sessions typically host them within 1 month of the event.

I. *Revised Perception of State of Preparedness*

It is hypothesized that the majority of municipalities will amend their original answer in regards how prepared they in responding effectively during an emergency or disaster in their community. It is expected that the municipalities will decrease their level of preparedness.

This was supported by the data as shown below:

How would you classify your overall state of preparedness in the event that an emergency or disaster occurs within your community?	Initial Response	Revised Response
Very prepared	16.13%	6.25%
Sufficiently Prepared	67.74%	25%
Need more planning and preparation	16.13%	50%
We are not prepared	0%	18.75%

The following areas were identified in which time and effort will be expended to improve their level of preparedness with regards to their emergency supply chain.

Activity	% of Municipalities
I will NOT invest any time or effort in this regards	12.50%
Increase next year's budget for allocating time towards developing an emergency plan for supply chain management	18.75%
Train staff in areas of emergency logistics and procurement	37.50%
Create a database of goods and services required during an emergency	31.25%
Create a list of pre-qualified vendors to support during an emergency	37.50%
Create forms and templates to manage the acquisition of goods and services	50%
Create forms and templates to manage the receipt and distribution of goods and services	50%
Create forms and templates to manage the returns of goods	43.75%
Create forms to track expenses during an emergency	50%
Develop a Recovery Plan with regards to the emergency supply chain	43.75%

Surprisingly, municipalities that listed they will not invest any time or effort to improving their level of preparedness either indicated that they needed to be more prepared or they were not prepared at all. Reasons for this could be attributed to the lack of resources (staff, time, and funding) to allocate towards any of these activities. Another reason is that these municipalities do not see any value in expending resources towards becoming better prepared if they feel the likelihood of an emergency or disaster occurring in their community is minimal.

Survey Conclusions

The 4 hypothesis proved true as follows:

1. Majority of Ontario Municipalities would report that they are sufficiently or well prepared but in reality require more planning and preparation.
2. Majority of Ontario Municipalities lack pre-arranged supplier agreements.
3. Majority of Ontario Municipalities have a poor representation of pre-determined lists of goods and services required to set-up and operate Reception Centres and/or Evacuation Shelters.
4. Majority of Ontario Municipalities fail to test their supply chain vulnerabilities and supplier base during annual exercises.

Recommendations

The following recommendations were developed as a result of this research project.

1. Promote emergency logistics as part of the municipal emergency management strategy.
2. Ask Emergency Management Ontario (EMO) to provide training support in the area of emergency logistics or promote a certification program through an independent body.
3. As part of the HIRA assessment, have municipalities included risks and vulnerabilities to their supply chain and steps to mitigate these risks.
4. Municipalities should develop a database of goods and services to support the set-up and continuous operation of a Reception and/or Evacuation Shelter, which is linked to approved suppliers.
5. Municipalities should have in place supplier pre-agreements in all types of industries for the provision of goods and services.
6. Municipalities should develop internal processes for tracking spending decisions from the initial requisition to distribution, including the Recovery Phase.

These recommendations should be announced to all Ontario municipalities CEMCs by the end of the fiscal year 2014, through regular visits by EMO Field Officers, as well as written report from EMO Deputy Chief, Support Services.

Promotion can take the form of a campaign to promote emergency logistics, as well as actively provide access to training opportunities. Annual exercises can also include a requirement to include scenarios that involve risks to the municipal supply chain and/or extend invitations to suppliers to participate. As part of the auditing process, municipalities would demonstrate that they have processes in place to maintain spending control during an emergency or disaster.