Building Resilience in Community Recovery

Overcoming Supply Chain Performance Challenges in a Crisis

CHARLOTTE FRANKLIN

At the local level, the traditional approach to resource management for recovery from a disaster has addressed private businesses in a conversation that begins “Here’s what you can do for us.” But this government-centered approach to emergency planning has an inherent weakness—it focuses on resource management as an inventory issue.

In contrast, approaching disaster recovery resource management as a supply chain issue focuses on the delivery of critical supplies to citizens more quickly and more efficiently. With this approach, local government initiates the conversation with private businesses by asking, “How can we clear the way for the delivery of emergency resources?”

Businesses already have the expertise and processes in place to move supplies into the community; they are the experts in recovery and continuity. The types of supplies that are needed may change depending on the effects of the disaster, but the delivery and distribution challenges remain consistent. The goal is to enable a fast, smooth transition from the supply chain’s normal, cost-efficient function to the life-saving focus needed in a crisis.

Timing is the most important component of any local government’s approach to disaster planning. Plans for supply chain involvement must be in place well before an emergency occurs. Government must stand ready to clear the way for private businesses to deliver disaster recovery resources quickly and efficiently, so that lives and businesses can return to normal.

Resource Management Lessons

The middle of an emergency is too late to start planning—the need is for doing. In this context, the following observations apply:

◆ During the period when response is the priority, the delivery of short-term recovery resources into the community will experience delay at some point. If short-term recovery could start immediately, the right supplies could already be on the way during the response phase.

◆ The private sector and the nonprofit sector are participants, whether invited or not. Local emer-
Emergency managers therefore could work with both sectors before an event to prepare for and address regulatory and policy obstacles that may impede full and successful participation. Emergency managers are less available during the chaotic phase immediately after a major event; therefore on-the-ground situational awareness could be established before an event to allow the private and nonprofit sectors to operate independently, efficiently, and effectively.

- When an incident disrupts normal operations, the supply chain abruptly shifts into an emergency mode, in which everything changes, including objectives, commodity flow, the balance of demand, decision-making procedures, the repetition of established cycles, and the choices of supporting infrastructure. The mechanics of these shifts can be examined in developing new approaches (1).

- Community resiliency can be measured only after an incident by the length and efficiency of the recovery time. A resilient community will recover faster and will return to the new normal more effectively than one that is not. Local emergency management therefore needs to make supply chain resiliency a priority, not an after-the-fact solution.

- Recovery resource conversations have focused on inventory and warehousing. Yet emergencies are unpredictable; the needs, quantities, and affected populations and locations vary; and the destruction may affect the safe storage of resources, complicating the preplanned deployment of inventory and warehousing. Shifting to a supply chain model introduces adaptability, which allows the delivery of recovery resources to be preplanned and managed, from point A to point B.

- The for-profit supply delivery systems actively intersect with the nonprofit services at work in the community, daily delivering food, medical services and supplies, water, and shelter—for example, food chains donate nearly-out-of-date food to food pantries every day. The new approach to recovery resource management could leverage this point of intersection and avoid reinventing a process that already works.

These observations are true wherever a disaster may occur. The concepts can be examined to determine what actions can be taken and what tools can be designed to address the dilemmas of recovery resource planning.

**Program Actions**

In Fiscal Year 2013, the Arlington County Office of Emergency Management, on behalf of the Northern Virginia Emergency Response System (NVERS), began implementing a supply chain-focused partnership between local government and private businesses:

- Locations are being determined for the drop-off and distribution of disaster recovery resources. By
Summit Explores Lessons from Supply Chains

On January 30–31, 2013, the Arlington County Office of Emergency Management successfully completed a two-day Local Supply Chain Capacity in a Crisis Summit Exercise. The summit addressed a new approach to improve disaster planning by working through the supply chain. With speakers and panelists from the public and private sectors, as well as from nonprofits, program discussions centered on the challenges and solutions related to the development of a local supply chain approach to disaster resource planning.

U.S. Coast Guard Admiral Thad Allen (retired) keynoted the first day’s program. Panelists examined issues that confront the transportation, communications, and power infrastructures in the delivery of resources for community recovery. Presentations focused on real-world experiences and defined the critical components for solutions addressing recovery challenges.

The keynote speaker on the second day was Charley Shimanski, Senior Vice President of Disaster Services for the American Red Cross. Panelists examined supply chain issues in the delivery of financial services, medical supplies, and other vital resources. The presentations explored how to create a successful supply chain solution that expedites the delivery and distribution of resources.

Charlotte Franklin, Deputy Coordinator of Arlington County’s Office of Emergency Management, noted the importance of understanding what happens in the supply chain when “normal” abruptly shifts to “emergency.”

“Supply chain modeling is more flexible and can adapt more readily to supply-and-demand shifts that occur when a disaster strikes,” Franklin observed. “The goal is to develop salient, supply chain–focused recommendations and remedies for disaster resource planning.”

A report with recommendations for local supply chain capacity has been published, using the distribution paths already in place in every community, resource providers and local governments can rely on food pantries, medical dispensing sites, temporary shelters, and organizations such as Goodwill and the Salvation Army to help receive and distribute critical supplies and to help manage donations.

- A Public Recovery Resource Access Portal is in development on the web, and a major project will add map layers and expand usability across jurisdictions. The online resource provides real-time updates to help businesses and the general public know where to donate and receive supplies during a disaster. The portal design is easily adaptable to any jurisdiction. Funding is through an Urban Areas Security Initiative grant from the U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA). Documentation to assist jurisdictions in developing their own public access portals is in process through a grant from the Rockefeller Foundation’s 100 Resilient Cities Centennial Challenge.

- A Regional Catastrophic Resource Planning Summit Exercise convened January 30–31, 2013, in Arlington, Virginia (see sidebar at left). Participants included grocers, retailers, supply chain experts, representatives from financial institutions and medical suppliers, and stewards of the critical infrastructure that supports their activities. Private-sector representatives, staff from Information Sharing and Analysis Centers (ISACs), and local emergency managers worked together to develop tangible, before-the-event remedies that every community can apply to mitigate the impact of a disaster on the distribution and delivery of goods and services. Recommendations from the summit, which was funded by FEMA’s Regional Catastrophic Preparedness Grant Program, are available to all communities as a guide for a supply chain–focused approach to emergency preparedness.

Risk and Flexibility

Almost all decisions incorporate uncertainty about the future. The assessment of uncertainty and the risk inherent in these decisions can be critical, especially in a disaster (2). Providing the real-time, granular information required for sense-and-respond situational readiness can help assess risks when information about future events or the effects of events is incomplete and imprecise.

Risk analysis is the main tool for dealing with uncertainties. Without proper information or the

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1http://recoverydiva.files.wordpress.com/2013/06/arlingtonsummitreport_finalrev.pdf.

2http://recoverydiva.files.wordpress.com/2013/06/arlingtonsummitreport_finalrev.pdf.
ability to perform real-time monitoring, strategy and risk analysis cannot be fine-tuned and complete for making predictions. Risk is related to a lack of knowledge about the future; the more information available, the more is known and the less the risk.

Businesses achieve the flexibility needed during a crisis by sharing key supply chain data with business partners. Information transparency is critical in providing visibility for product movement and in understanding the impacts on operations. In a weather-related emergency, a retailer is likely to face disruptions in receiving products allocated to, from, or through affected areas. Accurate product tracking and visibility enhances the ability to locate products in the supply chain at any time. The ability of retailers, carriers, and suppliers to access the same real-time tracking information can ensure that a product is rerouted to a nearby facility or a forwarding location.

**Intelligent Tools**

Also important are intelligent and responsive tools to anticipate and react quickly to changing demand. Retailers and shippers need to sense and respond to immediate increases in demand. With intelligent tools that track product movement, such as radio frequency identification (RFID), retailers can redirect and reallocate products out of harm’s way and maintain profits even during an emergency.

These tools also provide visibility into product shipments and cost structures. The visibility of the exact location of products on individual trucks is vital. A rerouted truck will need to arrive at multiple destinations in the right order to facilitate efficient unloading. Responsiveness tools help companies anticipate demand changes and react intelligently in emergencies (3).

Responsiveness entails the accurate anticipation of changes in demand. In a natural disaster, demand can spike and shift unpredictably—the time for reaction is razor-thin. Instead of forecasting from several sources, a single point of demand can be established to increase visibility and avoid wasting time in reconciling information from different divisions. Companies do this to respond quickly, scheduling the necessary labor resources for the expected volume increases and planning for the replenishment of assets back through the supply chain.

This is how a supply chain responds to sudden disruptions. But immediately after a disaster strikes, what local information can be made available so that inbound recovery resource providers are part of the communication loop and do not make independent decisions or search on their own for information about what is happening? Adept use of sophisticated information tools can help, but only if the most valuable real-time information is provided in a trustworthy and usable format.

**Survey Insights**

To determine the information that would be most valuable to recovery resource providers immediately following an emergency, a survey was sent to 30 professionals who deal with supply chain matters in either normal or emergency operations. Recipients were asked to identify from a list the real-time information items that would be most valuable for supply chain continuity during a crisis. The survey results showed that 93 percent to 100 percent of the respondents agreed about the value of the following real-time information:

- Transportation—specifically, detours, traffic conditions, and bridge and road closures and access;
- Energy—specifically, power and electrical outages and mobile fuel supplies;
- Telecommunications—specifically, service disruptions and Internet access;
- Resource management—specifically, identification of resource needs, locations for drop-offs and deliveries, and coordination with other providers;
- Infrastructure status, especially water conditions;
- Weather conditions; and
- Real-time situational awareness through the local emergency operations center (EOC) and a mode of interfacing with EOCs via real-time, electronic alert systems.

Of the respondents, 80 percent thought that changes in regulations or policy would be useful. Respondents also indicated that the following addi-
tional real-time information was important for continuity during a crisis:

- Current threat status, criminal activities, and responses;
- Central information and availability of data for real-time mapping and information sharing; and
- Key points of contact at government agencies.

Addressing Challenges

Probably the most valuable information captured through the survey was the identification of challenges that confront private-sector supply chain managers during a disruption that could be addressed by emergency managers before an event, facilitating the delivery of goods. The most effective way emergency managers can partner with private-sector providers during an emergency is to share information to develop mitigations and remedies to the unique challenges in transitioning supply chains:

- The uncertain condition of the transportation infrastructure compounds the challenges of meeting the needs of disaster victims.
- With markets evolving toward flexible, lean inventories, capacity is diminished, hampering the market’s ability to deliver supplies to victims in a disaster.
- Stakeholders have a gap in knowledge and skills; management tools and decision support systems need to be expanded, along with leadership capabilities and situational awareness.
- Storage and warehousing dynamics are changing in normal operations, affecting the response to needs that arise in an emergency.
- Communications capabilities continue to be strained, but social media and portable communication devices are making significant progress in improving what are termed common operating pictures—a single display of shared information.
- Legal and regulatory issues are changing in the new environment of homeland security. Requirements for cross-sector and cross-jurisdiction interfaces are challenging regulatory environments built over decades.

Information Platform

Arlington County has been investigating the requirements for developing the first phase of a comprehensive private-sector resource information platform to make the kinds of data described in this article available for any U.S. zip code. Many organizations have been collecting these data, and much is already available to the public, although often not in open format. Arlington County’s Public Recovery Resource Access Portal is a beginning and will provide the public with such vital information as which pharmacy is open and eventually which ATMs are in service.

References