

Food and Fuel as Critical Infrastructure: A Case Study from a Long Term Power Outage

By Christa J Fisher, Emergency Response Exercise Coordinator
Wisconsin Department of Agriculture, Trade and Consumer Protection

Introduction

When disaster strikes people look to government for leadership, direction, comfort, safety and security. Throughout history our country has been faced with and responded to many natural and man-made disasters. Government agencies, volunteer organizations active in disasters (VOADs) and private citizens have worked together and independently to overcome the obstacles caused by these incidents. However, the events of September 11 and more recent extraordinary natural disasters such as Hurricane Katrina, 2008 Midwest Flooding and 2009 Kentucky Ice Storm have demonstrated the need for a more aggressive approach to coordinated public-private partnerships among government, VOADs and industry. The Wisconsin Department of Agriculture, Trade & Consumer Protection (DATCP) is responsible for ensuring the safety and security of Wisconsin's commercial food supply. In the event of a major disruption to Wisconsin's food distribution system, DATCP realizes that its success in maintaining ready access to the food supply is dependent upon effectively partnering with stakeholders involved in food distribution: private industry, VOADS and various levels of government. To that end, DATCP invited stakeholder representatives to participate in developing a statewide emergency food distribution plan which involved identifying existing capabilities, resources and gaps in the food distribution system. This information was used to develop a food emergency "toolkit" to assist all stakeholders in a large-scale food emergency.

Shortly after the Food Distribution Focus Group began meeting, the State of Kentucky was paralyzed by a severe ice storm, leaving some areas of Kentucky without power for nearly one month. To better understand how the ice storm impacted Kentucky's food distribution system, DATCP conducted extensive interviews with Kentucky county emergency managers, as well as industry and VOAD representatives. DATCP also reviewed copies of Kentucky's Emergency Response Plans, Memorandums of Agreement and After Action Reports. Through this research DATCP identified four resources essential to food distribution: *power, communications, transportation and fuel*. The absence of these critical resources resulted in a compromised food distribution system throughout much of Kentucky in the days and weeks following the storm.

Kentucky's Ice Storm

On January 27, 2009 a severe winter ice-storm struck the State of Kentucky, compromising critical infrastructure, paralyzing industry and limiting access to critical resources, such as food, water and fuel. Electricity was scarce in much of Kentucky during the first two weeks post-storm and some rural areas were without power for nearly one month. Communication systems were significantly compromised due to lack of power, felled phone lines and damaged cell-phone towers. Transportation systems were disrupted due to hazardous road conditions and lack of gasoline. Shelters were established in many counties through volunteer organizations such as the Red Cross and Salvation Army while hospitals and nursing homes served as feeding and warming stations. The storm, often referred to as "The Storm of the Century," tested the State in multiple ways, requiring representatives from all government agencies, as well as volunteer organizations, individual residents and industry representatives, to participate at some level, in emergency response and recovery efforts. For the purpose of this paper and our project, we are focusing on the ways in which government, volunteer organizations, industry and private citizens worked independently and in partnership to restore continuity to Kentucky's food distribution system. The storm, and the stories that follow, compel us to ask the questions, "What role are food retailers and distributors able to assume during a large-scale disaster, and how do these lessons impact the way we develop and implement emergency response and recovery plans?"

Community Impacts and Ingenuity

Power

Electricity is essential to the daily operations of home and community. Without power many of the services which we depend upon, and yet take for granted, come to a halt – we are unable to heat our homes, cook or preserve our food, communicate through telephone or e-mail, bathe or flush our toilets, or fuel our vehicles.

Directly after the ice-storm hit, Kentucky was nearly paralyzed due to wide-spread lack of power. While critical infrastructure, such as hospitals, prisons and government agencies were powered through

generators, secondary infrastructures including grocery stores and gas stations did not have access to generators and were left without power. The food retail industry does not often invest in generators or generator hook-ups. Given the profitability margin of many grocers, alternate power sources are cost prohibitive when considering the likelihood that they might never be used. Additionally, there is little incentive for grocers to invest in preserving their perishable inventory because losses they incur are usually covered by insurance. So, rather than spending large amounts of money on loss mitigation, retail food owners instead rely on insurance coverage and hope and expect that emergency managers and utility companies will make restoration of power to retail food establishments a priority. With a few exceptions, this was not the case in Kentucky. Because food retail is not often thought of as critical infrastructure, the location of retail stores was not considered by many utility and emergency managers. Rather, restoration of power was often delineated with critical infrastructure (i.e. hospitals, prisons and government agencies) receiving first priority and the remaining power within a community being restored based upon a “biggest bang for the buck” strategy. Greg Godbe, owner of Greg’s Grocery Store, in Clinton, KY was frustrated with the manner in which priority of power restoration was determined. “Other parts of town received power before we did, even though there were no grocery stores in those areas.” Although grocery and convenience stores are not considered critical infrastructure, they are still essential to the well-being of a community. Greg Godbe owns two grocery stores in Kentucky, both of which are the only grocery stores in their respective communities. So, while some residents of Clinton were able to prepare and preserve food once their power had been restored, they were still unable to purchase food because the local grocery store was closed due to continued lack of electricity.

The importance of the local grocery store was underscored by an experience in Diamond, Kentucky. Redwoods Market is one of three grocery and fuel suppliers in the Diamond community, all of which were inoperable. After being without power for two days, a local resident contacted the owner of Redwoods Market to discuss the option of powering the market through a generator. Although the market was not wired to receive a generator, the resident knew an electrician who could do the electrical work. He also had access to small generator which could run components of the store, allowing people to do some grocery shopping as well as purchase fuel. Within a few days the market was open for business. If

patrons were unable to find what they needed at the Redwoods Market, they could now travel to another grocery store in a different community because they had the ability to fuel their vehicles once again.

Many grocery stores in Kentucky chose to operate without electricity for a few hours each day, selling non-perishable items such as lighter fluid, charcoal and water. Patrons shopped with flashlights, using an honor system based on calculators, paper and pencils to account for their purchases. Once supplies were depleted, however, these stores were forced to close.

In many rural Kentucky communities there is only one grocery store or gas station. Additionally, many residents in rural areas did not have access to shelters or feeding stations through the Red Cross, Salvation Army or other volunteer organizations, and relied upon the local grocery or convenience store for their sustenance. The result was that entire communities suffered because the grocery store and gas station in their community were unable to operate.

Although the strategy for restoring power frustrated many food retailers, food distributors benefited from the situation. American Wholesale Grocers (AWG), a major grocery distributor based in Tennessee, was able to accommodate the needs of their Kentucky clients in a timely manner due to the incremental restoration of power throughout the state. Had power been restored to all of their Kentucky clients at or near the same time, AWG predicts they would have been overwhelmed and unable to meet demand.

Communication

While many communities in Kentucky were without power for up to two weeks, equally as many were without telephone, cell-phone and internet service for the same period of time. The inability to communicate electronically added a new layer of complexity to an already challenging situation.

One result of the damaged communications system was that grocery store and gas station owners were unable to contact utility companies to determine when their power would be restored as well as contact their distributors to cancel or amend scheduled shipments. They also struggled with how to coordinate

donations of perishable-food items to the local shelters and feeding stations before their inventory spoiled. Because of their inability to communicate with shelters and feeding stations in a timely manner, significant amounts of perishable food was destroyed rather than integrated into local feeding efforts. The disposal of perishable foods presented its own unexpected challenges. Legal liability required grocers and distributors to monitor the disposed food, making sure it was not looted. Since they were unable to contact the local public works department or waste management company to coordinate waste removal, it was particularly difficult for grocers and distributors to ensure that the spoiled food was not removed from trash bins or dumpsters.

Volunteer organizations, hospitals and emergency management operations were also impacted by the communication barrier. While Emergency Management had the ability to communicate with the state and federal government through satellite radios and Mobile Operations Centers, they were often unable to get timely information to residents within their counties. In areas where the Emergency Operations Center was not a pre-determined location and/or the Emergency Manager did not hold a full-time position, community residents and industry owners did not know who to contact or where to go to seek assistance. Likewise, volunteer organizations also struggled with how to quickly and effectively provide residents with information about local shelters and feeding stations. Hospitals and nursing homes functioning as warming and feeding stations were limited in their ability to solicit donations or coordinate purchases of food or other supplies from local grocery and convenience stores. In the past, they telephoned grocery stores to request donations or arrange for purchases. However, there was no system for or reason to contact grocery stores since telecommunications were inoperable and grocery stores were closed due to lack of power. One of the realities of living in a rural community is that most everyone is related or acquainted with each other. So, in these situations often an emergency manager, sheriff's deputy or fire fighter knew the name and home address of the local grocery store owner and was able to coordinate donations or purchases of supplies. Unfortunately, given the constraints of limited travel, compromised communication and lack of power, it sometimes took multiple days for these interactions to take place.

Transportation and Fuel

The ice storm had a devastating effect on transportation. The storm left thousands of trees and power-lines buckling and collapsing under thick layers of ice, blocking roads and driveways. In some communities transportation was crippled for nearly one week. Travel was equally hazardous on cleared roads due to sheets of ice blanketing streets and highways.

Shelters were directly impacted by the impaired transportation system. Many shelters were not established until two or more days post-storm due to hazardous road conditions and difficulties navigating road closures and detours. Once shelters had been established, however, capacity was low to moderate for the first few days due in part to residents' inability to travel from their homes to the shelters because of hazardous road conditions and driveways barricaded by felled trees.

While restoration of the transportation system was necessary for emergency response and recovery efforts, it was also critical to Kentucky's ability to maintain or restore continuity of their food distribution system. Grocery stores operating during this period were overwhelmed by the demand for food and supplies, requiring two or three semi-truck loads each of water and charcoal on a daily basis, in addition to their regular inventory. Operable gas stations were also overwhelmed by the demand for fuel. Gas stations with accessible fuel supplies had to manage crowd control and impose restrictions on the quantity of gasoline each customer could purchase. Due to hazardous road conditions, fuel transportation was impaired, often leaving gas stations without a replenished fuel supply for 24-hours or more.

The demand for gasoline and inability to access or quickly restore fuel supplies resulted in Calloway County's fuel vendor cancelling their agreement without any notice. Fire, EMS, first responders, public works and other government agents depended upon this fuel source for their emergency response activities. Without fuel, Calloway County's ability to manage emergency response efforts would be severely limited. Once again, due to the familiar nature of a rural county, the Calloway County Emergency Manager knew someone who knew someone else who owned a gravity fed fuel supply.

Calloway County quickly drafted an agreement with the new fuel supplier, preventing any interruption to emergency response operations.

Shelters and Feeding Stations

Volunteer organizations are an integral component of the emergency food distribution system. Directly following the ice storm, the Red Cross, Southern Baptist Convention, Salvation Army and United Methodist Committee on Relief managed 192 shelters and feeding stations, serving nearly 380,000 meals¹. Additionally, community hospitals and nursing homes also functioned as warming and feeding stations in many rural areas, providing warm and nourishing food free of charge and often serving more than four times their regular number of meals each day. "By 7:00 am [the morning after the storm], the hospital was filled to standing-room only. We usually serve 400 meals a day, but during the storm we were serving around 1,000 meals each day. We never turned anyone away," said Anne Newberry, Registered Dietician (RD), Director of Food and Nutrition Services for Murray-Calloway County Hospital.

Preparing so many additional meals, while short-staffed, and without access to additional food supplies, was complicated. However, the situations in many hospital kitchens were exacerbated by the fact that most of the kitchens were not completely functional due to lack of power. While many hospitals had generators for their critical services, their kitchens were not covered by generators. Stoves and ovens were usually operable because they often were powered by natural gas yet the rest of the appliances were defunct because they were reliant upon electricity. Efforts to salvage perishable food included storing frozen food outside in the cold-temperatures and cooking food as it thawed. Cold-storage foods, such as milk and cheese, were also stored outside or, if available, in other parts of the hospital, where refrigerators could be plugged into generator designated outlets. Due to the large number of people seeking meals, most hospitals served the food as quickly as it was prepared, eliminating the need to keep the food at a particular temperature for an extended period of time. While working in this environment, hospital kitchen staff throughout Kentucky demonstrated creativity, tenacity and a strong commitment to their communities. "We had to get creative and couldn't afford to waste any food. One day we made turkey and dressing and the next day we used the leftovers to make turkey pot pie. No one ever went

hungry. In fact, they ate rather well considering the conditions,” recalls Jennifer Schrader, RD, Director of Nutritional Services for Ohio County Hospital.

Collaborative Effort

The events of the Kentucky ice storm compel us to consider how food retailers and distributors can contribute to local emergency response efforts. Often grocery stores and gas stations are not included in emergency response planning because they are not considered critical infrastructure. However, considering the on-time demand for foods, they are a critical resource for ensuring that people have adequate supplies of food, water and fuel. While volunteer organizations such as the Salvation Army and Red Cross perform an outstanding service in their efforts to feed and shelter disaster victims, it cannot be assumed that they are able to help all victims during all disasters. Sometimes the scope of a disaster is large enough that it requires more resources than the volunteer organizations have available. By including food retailers and distributors in emergency planning, government, industry and volunteer organizations can partner more effectively and efficiently in their efforts to care for and repair communities stricken by disaster.

References

1. ***Kentucky Ice Storm Warms Hearts As Thousands Provide A Helping Hand***, FEMA, February 16, 2009, Release Number: 1818-016, <http://www.fema.gov/news/newsrelease.fema?id=47491>