Economic Resilience:
A Guide for
Business and Government

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Prepared for

North Central Texas
Council of Governments

by J&M Global Solutions

Cover Photos

Top: Dallas News, Scoop Blog, May 2015
Middle: Bank One Tower, by John T. Roberts, March 2005
Bottom: Submerged Pumpjack, Hagerman National Wildlife Refuge, May 2015
Bottom: Gas Pipeline Explosion, NBCDFW, June 2010

Economic Resilience: A Guide for Business and Government

ORGANIZING THE DISCUSSION

Disasters in North Central Texas, both natural and man-made, do not discriminate between large urban centers and smaller rural areas, between classes, or between economic sectors. They have the ability to fundamentally change the physical, social, and economic landscapes across all sectors of a community. Because of the role that businesses and economic development organizations can play in a post-disaster environment to assist communities, it is imperative that local governments and emergency management agencies coordinate with these organizations to enable a resumption of vital functions and services as quickly as possible. A robust business continuity and disaster recovery program is essential to establishing a stronger, more resilient community.

Cost of Disaster

The White House has estimated that climate and weather disasters in 2012 cost the American economy more than $100 billion. Focusing on just a single sector, electricity, a 2013 report by the President's Council of Economic Advisers and the Department of Energy found that the annual costs of power outages caused by severe weather average up to $33 billion per year, with that number rising to almost $75 billion when hit by an extreme weather event such as Hurricane Ike in 2008.

North Central Texas Council of Governments

The North Central Texas Council of Governments (NCTCOG), working with its Regional Emergency Management Working Group, secured funding to develop training, guidance documents, and tools to support regional businesses and local emergency managers in economic recovery planning and resilience efforts. This guide is the result of those efforts. It is intended to forge a better understanding of the unique roles of government and business and to provide recommendations and tools to improve the region's capacity to implement strategies that will enable more effective economic recover after a disaster.

Purpose and Objectives

By working together to improve economic resilience and recovery programs, businesses and government will increase the community's preparedness as a whole and improve its overall ability to respond to and recover from future disasters. The purpose of this guide is three-fold:

1. Educate and inform stakeholders about the importance of building and maintaining a resilient economy;
2. Outline steps and critical actions that can be taken by local governments, especially emergency managers, and the business community to make their community's economy more resilient; and
3. Strengthen the partnership between emergency management and business communities to meet the challenges of economic recovery in the post-disaster environment.

Organization

This guide is organized into four main sections. This first section provides an overview of risks facing the North Central Texas (NCT) region, establishes the meaning and importance of 'sustainability' and 'resilience,' and describes the important and unique perspectives of government, emergency management, and businesses in the economic recovery life cycle. The second section is devoted to business, providing information on pre- and post-disaster activities focused around critical business functions. The third section looks specifically at actions that local governments and emergency managers can take in both pre- and post-disaster environments. The final section includes the tools referenced in the guide, to include summary checklists for businesses and emergency managers.

Case Study: Greensburg, Kansas: Economic Diversification

In May 2007, Greensburg, Kansas, was a small agricultural town with a population of about 1,400. Cattle and wheat served as the main economic drivers and small retail shops provided most of the consumer products to local residents. The economy was struggling when an EF-5 tornado destroyed 95 percent of the town on May 4. Following the tornado, Greensburg faced a host of recovery challenges including destruction of utilities and other critical infrastructure, relocation of residents and businesses that might not return and high-priced unfunded rebuilding costs to achieve a stronger, more resilient community.

Within days of the tornado, two local business owners initiated a private-public sector coalition that went on to play an instrumental role in not only rebuilding, but recasting the economic and the brand of Greensburg. A week after the disaster, 800 residents met with local, state, and federal officials to have a community discussion that concluded with a decision by the town to become the "Greenest Little Town in America."

Eight years following the disaster, Greensburg is well on its way to implementing its long-term economic diversification strategy. Among the initiatives integral to remaking and rebranding the town is the Eco-Industrial Park, which offers a variety of incentives to attract new businesses, plans to build a tourism museum based on a long-standing tourism attraction in the largest hand-dug well in the world, and leveraging its new identity as a "living sustainable laboratory" to draw eco-tourists.

Source: Recovery and Resiliency Roadmap: A Tool for Economic Preparedness

Background

North Central Texas

NCTCOG serves the counties of Collin, Dallas, Denton, Ellis, Erath, Hood, Hunt, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Rockwall, Somervell, Tarrant, and Wise. Within those 16 counties are 169 cities, 22 school districts, and 31 special districts. The region is made up communities of all different types and sizes. It is a mix of urban, suburban and rural counties anchored by the Dallas-Fort Worth-Arlington Metropolitan Statistical Area (MSA), the fourth largest metro area in the nation. It is a major commercial, industrial, medical, and transportation hub that also includes five counties that have been designated as rural/non-metro by the United States Department of Agriculture (USDA) Economic Research Service (ERS).

The U.S. Department of Commerce Bureau of Economic Analysis (BEA) found that in 2013 the Dallas-Fort Worth Metropolitan Area ranked sixth in both Gross Domestic Product (GDP) and Real GDP for all metropolitan areas across the country and second within the State of Texas. The region has the most diverse economy in Texas and it has a 3.6 percent job growth rate – out-pacing the nation's 2.1 percent. If North Texas were a country, it would rank 27th in the world in GDP, just between Belgium (26th) and Venezuela (28th). With an estimated

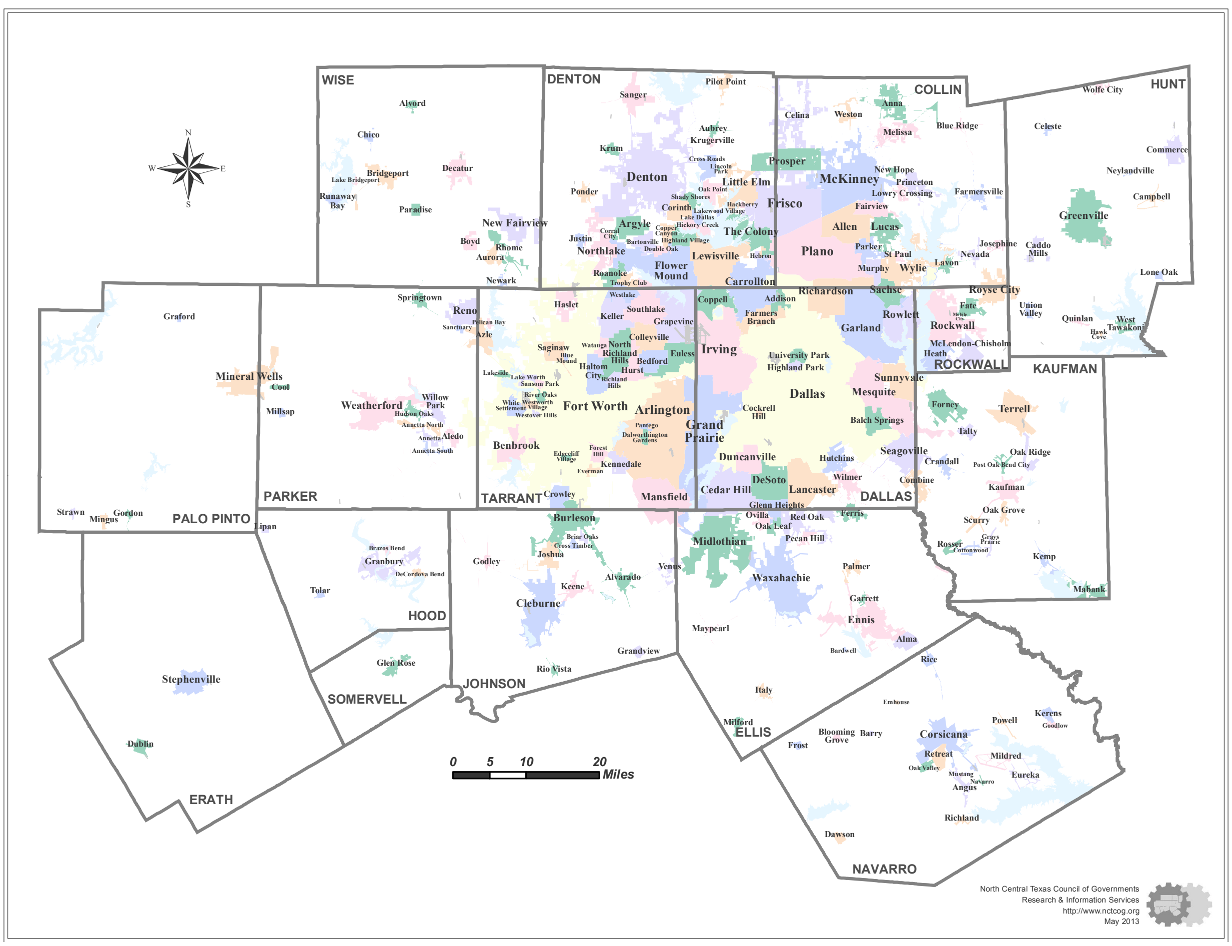


Figure 1: NCTCOG Member Counties

population growth rate of over 82 percent through 2040 and real gross product output forecasted to increase at a 4.37 percent annual rate through 2019 in both the Dallas and Fort Worth metropolitan areas, this area is vital to the health of our state and national economy. The risks to the regional and national economies are significant.

Developing an Understanding of Disasters and Economic Loss and Recovery

Most people think about disasters in terms of their physical effects, but it is much more complicated. Disasters generally have three primary components: the physical environment (infrastructure and geography); community of people (demographics and culture); and the hazard event itself (natural, technological, or human-caused).

Depending on the type of hazard and its constituent effects, different physical environments and communities will be impacted in different ways. Consequently, it is not the hazard itself that creates a "disaster" as much as it is the interaction between particular hazards, places, and people. For this reason, some experts say that all disasters are man-made; they are derived from the vulnerabilities and behaviors of a group of people in a particular environment that either magnify or diminish the effects of a particular hazard.

Types of Hazards

While this guide primarily focuses on natural disasters, it is important to remember that disruptions can be caused by technological events, industrial accidents, pandemics, or civil disruption. In addition, disasters can have cascading effects, with one disaster leading to another. For example, droughts can be a contributing factor to wildfires, and flooding or seismic events can lead to oil pipeline failures. In 1994, severe flooding caused the failure of eight pipelines crossing the San Jacinto River. Thousands of barrels of petroleum products were released into the river and ignited, resulting in $16 million in property damage.

The Federal Emergency Management Agency (FEMA)[43] defines the three types of threats and hazards as:

- Natural hazards, which result from acts of nature, such as hurricanes, earthquakes, tornadoes, animal disease outbreaks, pandemics, or epidemics. There may be some advanced warning with natural disasters, as with impending floods and public health emergencies like the Ebola outbreak.
- Technological hazards, which result from accidents or the failures of systems and structures, such as hazardous materials spills or dam failures. Usually, little or no warning precedes these disasters, as was seen in the 2003 Northeast Blackout.
- Human-caused incidents, which result from the intentional actions of an adversary, such as a threatened or actual chemical attack, biological attack, or cyber incident. Recent examples include the Ferguson Riots in Saint Louis, Missouri, and the contaminated water supply in Flint, Michigan.

The NCTCOG Threat and Hazard Identification and Risk Assessment (THIRA) identifies eight threats/hazards that are of concern, which include natural disasters (tornado, snow and ice storms, flooding, and wildfires), technological hazards (dam or levee failure and hazardous materials incidents), and human-caused threats (terrorism and disease outbreak). An estimated total of nine tornadoes, 207 severe thunderstorms, and 53 flash floods hit the NCT region per year from 1996 to 2005.

Since 2005, Texas has received 16 major disaster declarations. The NCT region was directly impacted by seven of them, with the most recent occurring in December 2015. Considering the size of the region (6.4 million people) and the multitude of entities that make NCT so diverse—third busiest airport in the world, global businesses, military bases, four mass transit entities, nationally and internationally known sporting arenas and special event venues, major interstate crossroads, and agriculture—it is evident that the economic stability of the region is not only important to its citizens but to the nation as a whole.

Number	Disaster	Declared Counties in NCT-Region
4255-DR	December 2015: Severe Storms	Dallas, Ellis, Kaufman, Navarro, Rockwall
4245-DR	October 2015: Severe Storms	Navarro
4223-DR	May 2015: Severe Storms	Dallas, Denton, Ellis, Erath, Hood, Johnson, Kaufman, Navarro, Palo Pinto, Parker, Somervell, Tarrant, Wise
4029-DR	August 2011: Wildfires	Hunt, Navarro, Wise
1999-DR	April 2011: Wildfires	Erath, Palo Pinto, Somervell
1697-DR	April 2007: Severe Storms	Denton
1624-DR	January 2006: Extreme Wildfire Threat	Erath, Hood, Palo Pinto, Tarrant, Wise, and all counties in the State

Table 1: Federally declared disasters impacting NCT region 2006-2015

Economic Impact of Disasters

The National Oceanic and Atmospheric Administration (NOAA) recently released a graphic showing the ten billion-dollar weather and climate-related disasters in 2015 (see Figure 2). These disasters included wildfires, drought, winter storms, severe weather, flooding, and tornadoes, and two of which were located in Texas.

Economic impacts from disasters can be widespread and difficult to quantify, and information from insurance companies may only addresses their individual policy holders. While the examples below provide an overview of insurance losses or damage costs, they do not reflect the full economic impact to the area such as business losses or tax base impacts, nor do they necessarily reflect all damages as some people may not have had insurance and their losses would not be reflected in calculations from insurance companies.

- In Texas, preliminary estimates from the Insurance Council of Texas show that they have experienced losses of up to $1.2 billion in the Dallas metropolitan area from the nine confirmed tornadoes that struck on December 26, 2015.
- In Ferguson, Missouri, the value of buildings destroyed in the rioting in 2015 has been calculated at over $4.5 million, with 17 businesses having their buildings deemed "unsafe structures."[45] After the 1992 Los Angeles riots, a study estimated that $3.8 billion lost in taxable sales over a ten year period.[46]
- Anderson Economic Group reported that workers and investors lost over $4 billion in income due to reductions in wage and salary due to the 2003 Northeast Blackout.
- In 2011, Texas experienced extreme drought and extreme heat resulting in an estimated loss for Texas livestock and crops of more than $7.5 billion.[44]
- The four costliest hailstorms in Texas have all occurred in Northern Texas, with two of them concentrated in the NCT region. In April 1992, $1.2 billion in damages occurred in Fort Worth and Waco, while $917 million in damages were reported in the Dallas area in June 2012.
- An "extraordinary windstorm" resulted in $400 million in damages in the Dallas/Fort Worth area in 2009.
- In 1995, softball-sized hail fell in Tarrant County, accompanied by flash flooding and high winds. Insured damages reached nearly $1.1 billion, with cleanup costs of about $220 million.[47]

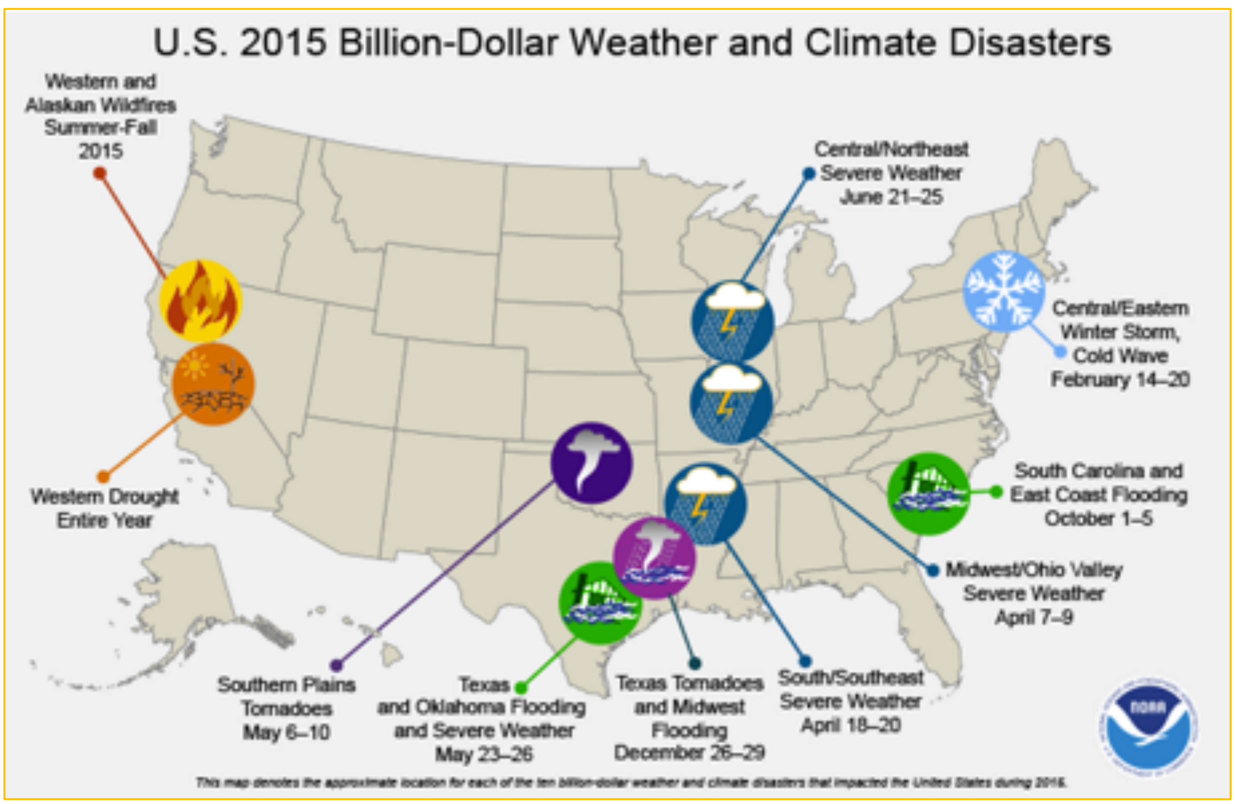


Figure 2: 2015 Billion-Dollar Disasters

THE CASE FOR ECONOMIC RESLIENCE

Resilience is the ability to adapt to changing conditions, and withstand and rapidly recover from disruption due to emergencies. (National Disaster Recovery Framework)

Given the importance of the NCT region's economy, its risks, and the potential for economic loss, it is important to understand what mitigation actions can be taken prior to a disaster to make the economy more sustainable. Similarly, the region needs to identify what actions can be taken in the post-disaster recovery phase to restore the economy and make it more resilient to future disaster events. At its core, economic resilience depends on reducing the impact of hazards on critical business functions and increasing the speed with which they come back on line.

The concept of resilience should be the starting point for thinking through how we prepare for, respond to, and recover from these worst cases, and what is necessary to maintain the integrity of our communities. Resilience has a variety of definitions depending on its context, but the simplest definition is the "ability of a system to respond and adapt to change." While many people describe resilience as "bouncing back," that is rarely possible after catastrophic changes from a major disaster. Even though we can rebuild structures and bring utilities back on line, daily routines and operations generally shift irrevocably into a "new normal" that require new ways of living and acting. Modern resilience is therefore based on sustainable development, resource diversification, and adaptive planning that provides the tools and flexibility to weather changes and improve our quality of life.

Economic resilience is no different, and has become a higher priority on the local and national level as the frequency and cost of disasters increase. While the recovery of households remains a top priority for citizens and governments, the growing consensus in the emergency management field is that the economy is a central component of local and regional resilience.[1] Approximately 85 percent of our nation's critical infrastructure such as agriculture and food, telecommunications, energy, and banking is concentrated in the private sector.[2] Studies after Hurricane Ike showed that the recovery of Galveston neighborhoods was correlated with business return, as households were more likely to be reoccupied when businesses were present. This was especially true in low-income neighborhoods that depended on local small businesses for daily goods and job opportunities.[3]

Investing in resilience is consequently an investment in the long-term health of total communities. Resilience activities focus on reducing vulnerabilities in firms and populations that are susceptible to disaster, while planning for the inevitable problems that cannot be foreseen. Although we tend to treat the "private sector" as somehow separate from public activity and services, businesses are at the core of our urban and rural systems, and require the same level of support and planning that our everyday citizens do. Some key points regarding economic resilience are discussed below.

Good economic resilience depends on good economic development.

A strong and diverse economy will generally suffer fewer effects from a disaster, and will have many more resources to invest into response and recovery. Economic development becomes resilient when it connects a diverse network of firms with a flexible workforce. This means being able to ***identify*** linkages and weaknesses in the economy, ***incentivize*** a broader mix of firms that enhance those linkages and mitigate the weaknesses, ***enable*** the capacity and access of the workforce to seize new opportunities, and ***prepare*** for the persistent gaps that cannot be addressed through routine development.

Resilient economic development can be a profitable investment, not just an expense.

Integrating resilience into economic development may be oriented toward likely future shocks, but its dividends begin to pay-off in the short-term as infrastructure construction creates new jobs and economic multipliers.[14] Moreover, resilient communities are becoming a more important factor in how companies make siting decisions for their plants and headquarters, which makes investing into local resilience critical for securing new economic opportunities. Finally, supporting the private sector in preparing for disruptions yields its own rewards after disasters with shorter recovery times, greater productivity, and more stable tax revenues.

Not all kinds of economic resilience are the same.

Surveys of both large and small businesses show that firms generally invest in preparedness activities that are general, uncomplicated, and inexpensive to implement.[10] These measures are usually focused on employee and family safety, and evacuation plans. Activities like business interruption planning, sourcing backup generators, or preparing for business relocation are sometimes overlooked. In other instances, businesses have preparedness plans, but they may often be prepared for the wrong types of disasters.

Not every business will survive a disaster.

An important finding is that economic resilience is highly correlated with pre-disaster growth trends. Industries and firms that were struggling or in decline prior to the disaster generally experience an acceleration of that decline.[6,10] Resources for economic resilience should be applied where they can have the greatest impact, which may not coincide with failing businesses. Investing in and prioritizing actions that support the core of the economy, typically small and medium-sized enterprises that provide consistent employment and stability, may have a greater impact on economic robustness over the long term. Economic resilience planning should include business close-out and transition support as much as business recovery support. Helping already compromised business owners and employees transition into new opportunities is important for their personal recoveries, and can pivot the economy into healthier sectors.

The costs of economic resilience should be a shared endeavor.

Resilience is rarely based on factors solely internal to a firm, or on "boot strap" actions that individual business owners can take. Community recovery and resilience after disasters depends on mutual support through appropriate government action and partnerships between private organizations and other entities.[2,7] Besides their own preparedness activities, businesses should also look for opportunities to invest in overall community resilience since they rely on communities for labor, inputs, and other forms of infrastructure. Business leaders, especially of larger firms that utilize more local resources, should be engaged to invest in and support resilience initiatives that will benefit them later on. Economic resilience should be viewed as a collective effort across the entire community rather than an individual responsibility.

Case Study: Greater Oklahoma City Back to Business Initiative

In May 2013, a tornado devastated Oklahoma City, destroying hundreds of schools, businesses, hospitals, and homes. Moore, Oklahoma, was especially hard hit, with more than 6,000 potentially affected businesses. Over half of all businesses were struggling prior to the disaster. In the months following the tornado, many businesses grappled with the cost of repairing damaged buildings that resulted from temporary closures and unavailability of their respective customer bases.

The Greater Oklahoma City Back to Business Initiative was launched in in order to support the businesses in Moore and south Oklahoma City damaged by recent tornados. The initiative (a partnership between the City of Oklahoma City, the City of Moore, the Greater Oklahoma City Chamber, the South Oklahoma City Chamber of Commerce and the Moore Chamber of Commerce) allowed physically-damaged businesses to report their needs following the storm and get connected with resources to help them return to business.

The Initiative is intended as both a resource and information source for businesses. After a business reported its damage, representatives from the initiative assisted in directing businesses to recovery assistance options—some of which include donations from area businesses and short- and long-term loan programs. As part of the initiative, companies with resources to share were able to fill out a form and offer business supplies, office space, or other resources.

Sources: Dunn & Bradstreet (Oklahoma Tornado Disaster Impact Report); Moore, Oklahoma: Disaster Recovery Program Action Plan; Greater Oklahoma City Chamber website

UNDERSTANDING PERSPECTIVES: LOCAL EMERGENCY MANAGEMENT

In order for the private and public sectors to work effectively together after a disaster or emergency, open communication and a general understanding of the needs and priorities of each sector is important. Local emergency managers cannot do this alone. However, they can play a key role in economic recovery by building upon their function of coordination and stakeholder engagement. By establishing these relationships before a disaster occurs, communities will be better prepared to address these considerations when disaster strikes. Through these types of preparedness measures, emergency managers and local government will continue to facilitate the development of more resilient communities. For businesses, it is important to understand the policies and programs that frame local response and recovery activities.

Partnerships

"Firefighters assisted water utility personnel and vice versa – firefighters reported melted meters and pipes spewing water; utility personnel protected by firefighters restored water pressure. This event demonstrated the importance of established relationships and shared knowledge between emergency responders and water managers." – Reference to the 2011 Bastrop Wildfire in NOAA Case Study, Water Resource Strategies and Information Needs in Response to Extreme Weather/Climate Events

Impact of Local Emergency Management Actions

During disaster response efforts, local emergency management is very visible and active. They coordinate efforts to mobilize resources necessary to save lives, protect property, and meet basic human needs. They work with elected officials and state and federal agencies such as the Texas Division of Emergency Management (TDEM), FEMA, and the National Weather Service to alert officials and citizens of an impending disaster, coordinate an evacuation, if appropriate, and plan re-entry into an area.

Actions taken by emergency managers during a response can have a profound effect on businesses in the affected area, both directly and indirectly. In the aftermath of disaster, local officials may decide to establish curfews or restrict access to areas for health and safety reasons. When damage has occurred to roads and bridges, local officials may need to prioritize which infrastructure to repair and re-open first. These decisions may result in the loss of transportation options, which may disrupt supply, resupply, and distribution routes for the private sector.

Further, citizens may be displaced, which may deplete the workforce as well as the customer base. In addition, healthcare facilities, hospitals, and schools may be affected by a disaster, disrupting not only essential services but the income streams of persons working at these facilities, and influencing the decision of residents, who are also employees and customers, about whether they can return home. Actions taken by local elected officials and emergency managers to ensure the safety of its citizens may affect the pace of re-entry and an individual's ability to return home. Emergency managers will coordinate the restoration of public services, arrange for needed resources to be available to the region, and request federal assistance. This may include the provision of government housing assistance and other resources.

Legislation, Policies, and Tools Guiding Emergency Managers

There are various pieces of legislation and doctrine that guide the actions of emergency managers both pre- and post-disaster.

Texas Disaster Act of 1975 (Chapter 418)[48]

Chapter 418 of the Texas Government Code governs emergency management and provides local elected officials with the authority to declare a local state of disaster for not more than seven days, order an evacuation of the area, and control re-entry to the area. In addition, this legislation speaks to the Governor's authority to declare a state of emergency, mobilize state agencies (to include the National Guard), and activate, in coordination with the Texas Department of Public Safety, response and recovery sections of the state's emergency management plan.

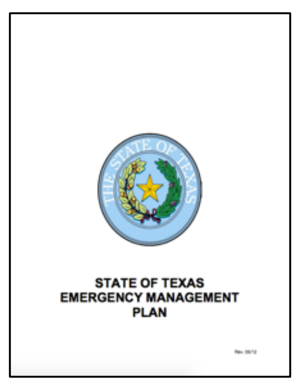
Mutual Aid

The resource capacity of local emergency managers may be quickly diminished. Therefore, an effective response could depend on the ability to obtain needed resources through mutual aid from other communities. Mutual aid agreements or established memoranda of understanding are integral parts of emergency management planning efforts. They address procedures related to the sharing of personnel, equipment, and other responses. While generally between governments, they may also be established between communities and private sector or non-profit organizations. They are used to enhance the ability of a community to respond or recover to an incident. This sharing of resources is especially beneficial to rural communities.

Mutual aid is also addressed under Chapter 418. The Texas Statewide Mutual Aid System provides a mutual aid response capability between local governments without a written mutual aid agreement. It addresses individual certification and reimbursement of costs.

State of Texas Emergency Management Plan

The State of Texas Emergency Management Plan[49] describes how the state will mitigate against, prepare for, respond to, and recover from the impact of hazards. It outlines the state's emergency management organization and identifies tasks and responsibilities. Some of the organizations working with businesses include:



- Texas Engineering Extension Services (TEEX) provides training designed to increase the skills of workers in a variety of disciplines.

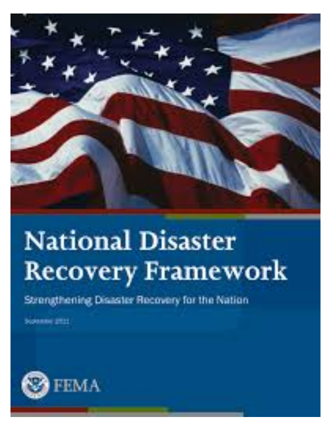
- Texas Department of Insurance (TDI) assists consumers, surveying insurers about business continuity and response plans, monitoring the handling of disaster claims, etc.
- Texas Economic Development and Tourism (EDT) works in partnership with economic development organizations, businesses, and communities by creating opportunities for growth and provides business, economic analysis, and financial assistance to communities.
- Private Sector Advisory Council (PSAC) advises the governor on critical infrastructure protection strategies and implementation of the homeland security strategy.

Disaster Declaration

The initial response to any disaster is managed by local governments. Should the magnitude of a disaster warrant it, under Chapter 418 the Governor may declare a State of Emergency and dedicate state agency resources including the National Guard. If the situation escalates beyond local and state capabilities, the Governor may then request the President to declare an emergency or major disaster, and if granted, this designation may either 1) specify individual assistance, debris removal or other life saving measures or 2) provide the full array of federal resources as outlined in the National Response Framework (NDRF). A Presidential declaration may provide communities with access to various federal programs, including FEMA aid programs such as:

- *Individual Assistance* program and activities help individuals and households recover following a disaster;
- *Public Assistance* provides assistance to state, tribal, and local governments, and certain types of nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared; and
- *Hazard Mitigation* funds to assist communities in implementing mitigation measures following a declared disaster.

National Disaster Recovery Framework



Historically, the profession of emergency management at the local, state, and federal levels focused primarily on response activities. While this focus remains paramount, greater emphasis has been placed on preparedness and mitigation activities through the years. Recovery was largely relegated back to the community and fueled by insurance, the private sector's drive to recover, and the community's willingness to bounce back. After Hurricane Katrina, however, there was a national recognition of the importance of and long-term commitment necessary to recover and become more resilient to future events. In the aftermath of Hurricane Katrina, the National Disaster Recovery Framework (NDRF) was developed to better organize the nation's approach to the recovery process. The NDRF is organized functionally around six recovery support functions (RSFs), and each RSF has a Coordinating Agency, as well as primary and support agencies to execute its mission.

Recovery Support Function	Coordinating Agency
Community Planning and Capacity Building	FEMA
Economic	Department of Commerce
Health and Social Services	Department of Health and Human Services
Housing	Department of Housing and Urban Development
Infrastructure Systems	U.S. Army Corps of Engineers
Natural and Cultural Resources	Department of Interior

Table 2: Recovery Support Functions and Coordinating Agencies

The mission of the Economic Recovery Support Function (RSF) is to utilize the expertise of the federal government to help local, state, and tribal governments and the private sector (1) sustain and/or rebuild businesses and employment, and (2) develop economic opportunities that result in sustainable and economically resilient communities after large-scale and catastrophic incidents. The Department of Commerce (DOC) has been designated by the President to serve as the lead federal agency for the Economic RSF, and the Economic Development Administration (EDA) is responsible for carrying out this mission.

After a disaster, Economic RSF teams spearhead the development of a mission scoping assessment to capture available economic recovery data and describe the significance of losses for the short-term, intermediate, and long-term recovery efforts. The mission scoping assessment serves as the foundation for the development of a recovery support strategy (RSS), which outlines economic consequences, strategic actions, and technical assistance projects designed to stimulate economic development opportunities for communities and industry. In some cases, the economic impact analysis is tougher in rural areas because often they are not served as directly by universities and other institutions who can assess impacts and consider the effects on the interdependent nature of local economies. In addition, these areas may lack the capacity in both the public and private sectors to fund and deliver economic recovery and resiliency programs. By having economic recovery programs in place, local communities will be able to better participate in this process and facilitate recovery efforts. While not all states have adopted the NDRF approach to organize state agency recovery efforts, it is important that they all be able to operate within this framework during a major disaster.

Leadership for recovery efforts in Texas is vested in the Texas Division of Emergency Management. Businesses should be aware that the level of direct funding support may be limited to pre-existing funding available under their existing budget and through their regular programs. Congress may provide supplemental funding to support recovery, but this is not a routine occurrence and is generally limited to catastrophic events.

Importance of Public-Private Partnerships

It is clearly understood in the NCTCOG region that both large and small businesses have a vested interest in understanding the role of emergency management both pre- and post-disaster. Similarly, emergency managers must recognize the needs and requirements of business and the direct and indirect effects that their actions may have on the economy. The partnership between local government, emergency management, and local businesses is essential to building and maintaining a resilient economy and ensuring a vibrant recovery process following a disaster. By working together, communities can overcome issues such as misinformation and lack of trust, build an understanding of the common and unique issues they face, and identify ways in which the public and private sectors can assist each other.

In any community, there will be individuals who trust their employers more than the government and those that trust government more than business. By ensuring that both the public and private sector are sharing the same information, the public may be more willing to believe what is being said about the disaster and recovery efforts and follow the prescribed guidance. Where government, emergency managers, and the business community have established relationships, they can assist each other by sharing situational awareness and helping to ensure that residents are receiving accurate information, thereby increasing the effectiveness of recovery programs.

Case Study: Florida Post-Disaster Redevelopment Planning

Over a 14-month period in 2004 and 2005, eight major hurricanes crisscrossed the state of Florida leaving devastating impacts in dozens of counties. Following the dramatic hurricane seasons, the state recognized the need for communities to integrate post-disaster redevelopment (PDRP) concepts and activities in local comprehensive planning efforts. The state received federal funding from Federal Emergency Management Agency (FEMA) and the National Oceanic Atmospheric Administration (NOAA) to conduct pilot program for PDRP planning and cross-sector PDRP plans were developed in five pilot communities. The resulting plans addressed the individual issues and cross-sector issues related to economic redevelopment, housing and historic preservation, infrastructure, health and human services, land use and environmental impacts, and the application of government resources and support role for post-disaster recovery.

The PDRP plans were developed through collaboration of public and private sector representatives in each of the discipline areas, identified roles and responsibilities for stakeholder organizations and include action plans in each sector area that identified activities to be taken in blue-sky and post-disaster periods intended to accelerate and strengthen post-disaster redevelopment and recovery. The PDRP initiative executed in Florida provided essential examples of cross-sector recovery planning that informed the development of the National Disaster Recovery Framework.

Source: Leadership in Times of Crisis Toolkit (restoreyoureconomy.org)

UNDERSTANDING PERSPECTIVES: BUSINESSES

Following a disaster, businesses generally have one common concern—resuming operations as quickly as possible. Their ability to do so is often compromised by factors that are mostly out of their control. Even if business owners can open the doors and resume core business operations, revenues may lag because customers have been affected, their needs may have changed, or demand may be reduced. In addition, consumers may have found substitute providers of the goods and services they need. While the influx of disaster responders may increase potential client base, in some instances, businesses may find themselves losing revenue because of response and recovery efforts. For example, if a grocery store is able to reopen quickly after a disaster, its owners will not want the government to establish a commodity distribution site across the street. It would take away from their business, potentially causing the store to close, which could hurt the community in the long-term once the distribution center is gone. Emergency managers need to coordinate with the private sector to ensure that necessary actions are transparent and visible to the business community and that they do not have unintended consequences.

Similarly, employees may have evacuated or their housing may be destroyed, thus reducing the human capital necessary for production or sales. Small businesses and some sectors like agriculture may also face particular issues around rebuilding due to low financial reserves and lack of access to financial capital.

Case Study: Cooperation in Texas Agricultural Recovery

Hurricane Ike made landfall in September 2008, and the resulting storm surge caused more than half a million acres of land used for farming and ranching to be submerged. Many animals were lost during the storm and immediately afterwards due to a lack of food and water. The salt water ruined the ground for grazing and flooded out freshwater ponds and tanks. It is estimated that the economic effect on Texas agriculture was $433 million.

A coalition of state government agencies and industry organizations supported the Texas Agrilife Extension Service as it organized volunteers to implement initial recovery activities to care for livestock (termed Operation No Fences), which resulted in an estimated $8.3 million in savings. Six months after the storm, the Texas Department of Agriculture hosted "Operation *New* Fences" with a goal of donating supplies (fencing and feeding) to almost 100 ranchers in southeast Texas to assist in recovering and rebuilding.

SOURCE: HURRICANE IKE IMPACT REPORT (THE STORM RESOURCE)

While many businesses can support themselves following disasters, government coordination can benefit economic recovery for those who cannot. The City of Keller, Texas, brought in a refrigerator truck to support businesses that lost electrical access following a massive fuel fire in 2012. The individual businesses may not have been able to organize this on their own, but the government could. On the other hand, minimizing negative recovery impacts on businesses is also important. FEMA's utilization of barges for transport in Galena, Alaska, following the

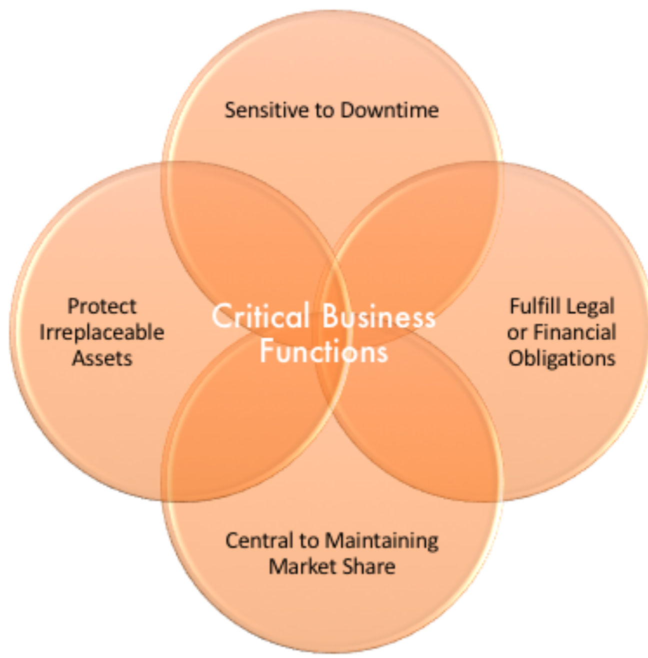
2013 flooding monopolized the transportation system most relied upon by local businesses. This hurt the struggling businesses financially, and likely resulted in bankruptcies.[37]

Businesses can play an important role in a community's recovery. They may provide vital services and own or operate the area's critical infrastructure. In addition, businesses provide jobs that promote community members' ability to purchase food and shelter. While this role of business is generally understood by emergency managers, there are a number of issues that may impact the private sector's ability to recover.

Coordination is key. It is imperative that businesses reopen so that people can go back to work and be able to afford their home repairs and support the overall community's needs. Restoring the community's tax base is critically important to the overall recovery of the community.

Critical Business Functions

Critical business functions are those aspects of a business's assets and operations that maintain its minimum business requirements and survival. These are issues that are key to businesses and important for emergency managers and local government to understand. Critical functions are usually those that are very sensitive to downtime, fulfill legal or financial obligations related to cash flow, play a central role in maintaining market share or reputation, and/or protect an irreplaceable asset.[38] For a retail store this might include having processes to obtain inventory, technology and financial systems to allow allow customers to pay for purchase, and a physical location to sell goods and materials. For a window manufacturer, this might include functioning equipment, access to electricity, and reliable labor.



Each business function has an associated "Maximum Tolerable Downtime (MTD)" (also known as the "Maximum Acceptable Outage").[15,16] This is the amount of time that a function can be compromised before business losses begin to occur. For example, the MTD for electricity at an internet-based business might be just a few hours, while the MTD for its physical offices might be several weeks since its operations are portable. *A shorter MTD generally indicates a more critical function.*

There is no consistent set of functions that are critical across all business types, although some, like buildings and utilities, are usually necessary. Every business is unique, and each business owner needs to perform his or her own analysis to determine which functions are critical to their business continuity. Once they are identified, business owners can focus their time and resources on either mitigating the failure of those functions or preparing for redundancies and alternatives when failure occurs. The accompanying Business Impact Assessment and Planning Tool can be used by businesses and business technical assistance providers to examine a business's core functions, identify critical processes, and develop mitigation and preparedness plans. (See Appendix C.)

Critical business functions generally fall within one of the following six categories:

 Structures and Equipment

 Utilities and Information Technology

 Transportation and Supply Chain

 Employees/ Workforce

 Customers, Markets, & Procurement

 Finance & Financial Systems

Structures and Equipment

Although many businesses are becoming mobile and can be located pretty much anywhere with an internet connection, the vast majority of businesses still require a physical location for operations. With growing pressure for cheap land and cheaper materials, development of commercial space often happens in high-risk areas like floodplains or older spaces with poor quality upgrades.

It is clear that hazards like tornados and floods can have significant impact on business continuity, particularly when equipment is destroyed or sales areas are compromised. Even in the event that insurance or savings are available to repair properties, it may take months or even years for payouts to be secured and repairs to be made. This is especially true when renters or leaseholders are dependent on absentee building owners who have less incentive to rebuild quickly or at all.

Regardless of damage to the structures, site access can also be difficult. If businesses are in an "exclusion" or "no entry" zone, obtaining access to important documents, inventory, or other business items may not be possible for an extended period of time. This can have cascading effects on operations. After the January 2015, Mission Fire in San Francisco, business owners were given only 15 minutes to enter the building after the fire was extinguished and salvage what they could.[50] Following the September 11, 2001, terrorist attacks, initial revenue losses in Lower Manhattan were mostly due to security measures enforced to keep residents and tourists from entering the area.[2] Retail businesses that attempted to operate in neighborhoods adjacent to the World Trade Center site were blocked from entry and abruptly lost customers even though they had no damage. This was also true in New Orleans during the first few months after Hurricane Katrina. The city was locked down and residents and business owners were unable to return.

Utilities and Information Technology

Numerous studies have shown that one of the largest factors for economic disruption is the loss of utilities and critical infrastructure services.[2,9,17,18] Sectors like the finance industry are almost entirely dependent on electricity, while the food and agriculture industry is similarly dependent on water. Increasingly, information technology (IT) services and accompanying infrastructure (e.g., computers, internet, etc.) are also becoming core dependencies for businesses on the level of utilities, with consequent disruptions resulting in critical losses. Physical damage to the business need not be present to experience utility interruption.

- *1993 Des Moines, Iowa, Floods*. After the floods, only 15 percent of businesses reported having flood damage while 80 percent of businesses reported loss of water, 40 percent lost sewer services, and 33 percent lost electricity. Almost half of those businesses reported closing for some amount of time.[17]
- *Central Texas 2011 Drought*. The 2011 drought in Central Texas depleted the area's main water supply reserves from Lake Travis and Lake Buchanan leading to water use restrictions. According to NOAA, these restrictions caused an estimated $3.5 million in revenue loss in Austin between 2011 and the spring of 2013.
- *Possum Kingdom Lake Wildfire 2011*. Along with the homes destroyed by the 2011 wildfire, the resulting loss of power caused problems at the Possum Kingdom Fish Hatchery. A lack of oxygen in the tank resulted in the death of some of the brood stock.

Lake Travis Economic Impact

The Lake Travis Economic Impact Report was commissioned to calculate a "baseline economic and fiscal value"[55] to the Lake Travis region. When lake levels fall below 660 feet, up to 241 jobs and $6.1 million in wages is lost, and local governments stand to lose as much as $21.9 million in total fiscal revenue. The study found that as lake levels drop, the costs associated with pumping and water treatment increase, the ability to generate electricity may be compromised, and utility providers may be unable to deliver potable water. In addition, marinas are forced to move docks into deeper water or close them altogether.

Source: Lake Travis Economic Impact Report

Mitigating and preparing for utility losses are generally city-wide or regional issues, and although there are some mitigating actions individual businesses can take, there is no way for them to completely protect themselves for all possible utility interruptions. Moreover, resuming utility coverage after a disaster is a core priority for utility companies, so it should be expected that utilities will come back online as soon it is possible. However, mitigation measures focused on lifeline systems for businesses significantly shorten the recovery period for those affected, and some constructive actions can be taken to minimize impacts and limit disruptions.

Transportation and Supply Chain

The loss of transportation services by road, rail, water, or air can affect businesses in a multitude of ways. This was seen in June 2015, when flooding led to the closure of parts of FM 2499 in Grapevine, Texas. Three core problems associated with loss of transportation services are 1) customers unable to get to the business, 2) owners unable to obtain supplies, materials, and/or labor needed to run the business, and 3) business unable to deliver products or services to their customers.[9] Clearly any of these items can have catastrophic impacts on enterprise integrity and have been shown to result in significant economic impacts. [2,18,21] This is closely related to supply chain problems for businesses after disasters. Besides the transportation issues involved, the loss of distribution centers, supplier firms, and export partners can impede the ability of businesses to provide products and services.

FM 2499 in Grapevine (The Cross Timbers Gazette, June 20, 2015)

In 2013, the Yukon River flooded in Alaska, causing extensive damage in and around Galena; the entire community is within the special flood hazard area of the Yukon River. Alaskan officials said federal and state government response elements should "use local merchants as intermediaries to deliver supplies to individuals and households affected by the disaster so that merchants in isolated communities do not go bankrupt." It was felt that FEMA would best serve disaster survivors by working closely with local business to provide disaster goods and services, when feasible.[52]

Employees/Workforce

The various employees that make products, provide services, or run daily operations represent a business critical function. However, employees face a full range of their own problems following disasters such as access to transportation, availability of emergency housing, short-term financial aid, childcare, payroll continuity, etc.[3,8,22] As employees deal with these issues, they often have less hours to apply toward work, or have difficulties balancing work and personal issues. At the same time, businesses with depleted cash flow or less production needs can find employee costs to be a burden and may be tempted to cut staff time just when employees need access to funds the most.

Nevertheless, a key lesson learned from previous disasters is that firms who invest in their employees more rather than less can have better outcomes in the long-run. Southwest Airlines was a clear leader in this regard following September 11. While the rest of the airline industry slashed jobs and contracted spending, Southwest held onto their employees and was willing to accept financial losses in order to maintain labor loyalty. While other airlines took years to recover, Southwest actually expanded operations after September 11 and succeeded where other competitors fell behind.[23]

While there are several other factors at play here, the takeaway is that economic resilience is closely related to the resilience of the workforce. In addition to post-disaster support, pre-disaster planning and investment is important. Encouraging employees to develop individual emergency plans and prepare for transportation alternatives after a disaster can increase their own personal preparedness as well as the business resilience. The more that businesses and organizations invest into employees and laborers, the more they can expect loyalty and support from employees. Social, emotional, and moral support can be just as important to resilience as material support. Similarly, when income-generating opportunities are maintained or created, there is more capital in the market for broader economic recovery.

Case Study: Munro, Inc. Workforce Support

Prior to Hurricane Rita hitting, Munro Inc. had a rudimentary emergency plan in place. It did not, however, account for power outages or food shortages. While employees had returned to the area, schools remained closed, causing an issue with day care. The company solved this problem by allowing employees to bring their children to work with them.

Based on lessons learned from the disaster, the company expanded its plan to include securing facilities prior to an evacuation and improving post-disaster employee communication. Munro has also stockpiled materials and supplies to support up to fifteen key employees for three days, installed a generator, and worked closely with local authorities to obtain clearance for key employees to return to impacted areas early.

Source: ready.gov

Customers, Markets, and Procurement

Disasters disrupt normal patterns of commerce, and customers may have dramatically different needs. An individual may less money than they normally would, and different routines as they look for goods and services. Customers that used to stop by the local pet store to buy treats for their dog may have been forced to take shelter on the other side of town, and may no longer have the money for extras, or may not even have the dog anymore. Spending disposable income changes from buying new TVs and sporting equipment to drywall and carpeting. An example of how disasters may disrupt normal commerce may be seen in the tourism industry, which is highly susceptible to brand damage. Following the British Petroleum (BP) oil spill, tourism in New Orleans and other areas of the Gulf Coast dropped substantially even though they were never directly affected by the oil.[2,25] For supply chain businesses, downstream buyers may have closed their doors or changed their production patterns. Throughout the economy there are millions of shifting purchasing decisions that disrupt the continuity of businesses and their ability to pay employees, pay taxes, and pay suppliers.

One of the often overlooked aspects of economic recovery is the issue of local procurement. After a disaster is when local businesses need revenue the most, but many governments and citizens rely on out-of-area contractors for goods and services. In some cases, this is necessary; local businesses may simply not have the capacity to deliver. However, this is more often a problem of perception and knowledge. After the Christchurch earthquake in New Zealand, the Central Business District was actually functional, but there was a perception that it was “closed for business,” and it consequently lost needed revenues.[26] Similarly, the attraction of a disaster to hundreds of mobile vendors from across the country can create a surplus in the market, which makes it difficult to know who is reputable, who is local, and who will reinvest into the community. This not only creates a situation of “capital leakage” from the community as dollars are hemorrhaged out to businesses from other areas, it also opens the door to fraud and poor workmanship as unregulated or unverified vendors profit off the recovery.

Economic resilience benefits from focusing recovery dollars into local businesses, as well as broadening markets for those businesses that will not fit perfectly into the recovery economy. This means improving the potential for import substitution before and after the hazard occurs, while diversifying the economy and increasing the breadth of exports to other locales. Again, good economic development on an ongoing basis will increase the ability of the economy to rebound when an economic shock happens.

Case Study: Charleston, South Carolina, Restoring Tourism Assets

In September 1989, Hurricane Hugo hit the Carolinas, with the eye of the storm directed at Charleston Harbor. Tourism is the Charleston area’s top industry and accounts for $2.8 billion in annual economic impact and $1 billion in industry employment. While hotels were operating at capacity the first four months because of cleanup workers, these individuals failed to provide critical revenue for the community, such as visiting historic sites, tourist attractions, high- end restaurants, and retail shops.

Local business owners launched a task force to “Save the Season.” Approximately 40 stakeholders met weekly to discuss recovery priorities, and the task force eventually integrated into the Charleston Convention and Visitors Bureau (CVB) Travel Council. Once recovery began to stabilize, the CVB launched the “We’re Going Strong” public relations campaign to dispel the perception that the damage was more extensive than it actually was.

The Charleston Metro Chamber of Commerce also created a Business Continuity Planning Council to encourage small businesses to make business continuity plans. It reached out to its network and brought in teams of local experts to speak on the various aspects of continuity planning.

Source: Recovery and Resiliency Roadmap: A Tool for Economic Preparedness

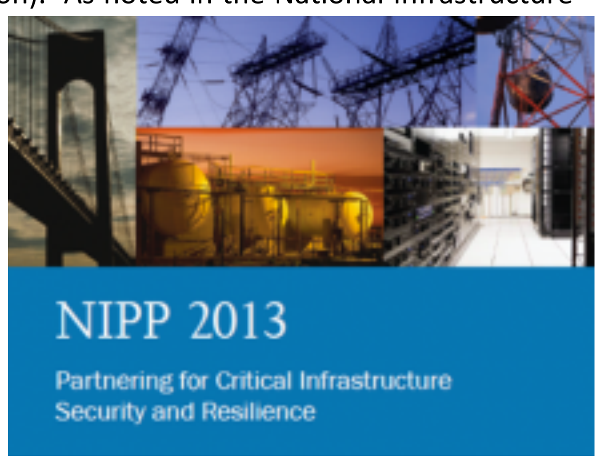
Finance and Financial Processes

Finance and cash flow are the lifeblood of economic activity, and generally no business can function without having access to funds. This is doubly true after a disaster when new and additional investments are required to repair damages or sustain slumping sales. Although large businesses may have cash reserves or access to investors from which they can source this excess capital, the majority of small and medium-sized businesses only have the necessary cash reserves to operate in a normal environment. Moreover, normal processes of securing revenues or paying expenses may be compromised after a disaster. Payroll, accounts payable, and accounts receivable may all be connected to computers, cloud services, or third-party operators that are offline due to a hazard. The same may be true for a business's banking institution if they are victims of the disaster as well.

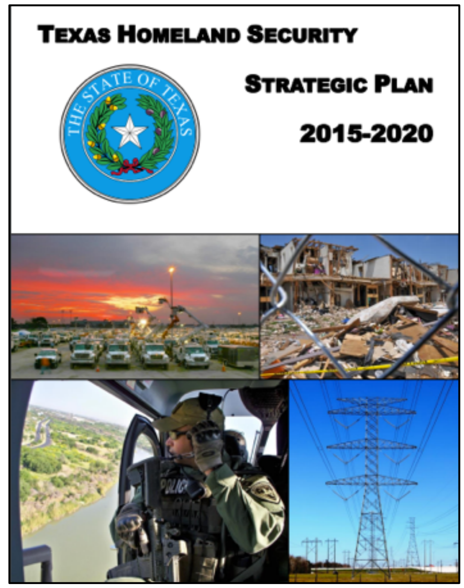
Access to capital may be difficult for business owners, especially for small businesses and rural agricultural sectors. While recouping losses through direct loans or insurance claims is one solution, many businesses may not have adequate insurance and/or are unable to access capital for other reasons. In many instances, these businesses may continue to be taxed on damaged properties which are not in operation, exacerbating this issue. To ensure business losses are kept to a minimum and that they resume operations in a timely fashion, it is imperative that business owners gain access to funds—loans, grants, insurance claims—for a variety of needs such as structural repairs, purchasing of equipment purchases and maintenance, materials, inventory, property and fixtures; working capital, technical assistance, and employee training.

Interdependencies

Interdependencies can increase the risk of business failure or amplify the consequences of a disaster or disruption. These can cause cascading failures (where one disruption leads to another, like a line of dominoes falling) or escalating failures (when a disruption in one business function exacerbates a disruption in another function). As noted in the National Infrastructure Protection Plan (NIPP), "in some cases, a failure in one sector may significantly impact another sector's ability to perform necessary and critical functions." Further many sectors rely on utility service grids, including energy, telecommunications and information technology, and transportation to manage day-to-day operations and conduct critical business functions. A failure or disruption in one of these service areas can prevent others from functioning properly. It is important to identify and consider these interdependencies when assessing business functions.



The Texas Homeland Security Strategic Plan (2015-2020) has identified five critical infrastructure sectors as "lifeline sectors." This means that all other sectors are dependent on them for operation. They include communications, energy, transportation, water and wastewater systems, and financial services. Should a disruption occur in any of these areas, the impact would cascade throughout the community and the state. The strategy acknowledges that effective public-private coordination is the key to ensuring the protection of these systems.



Case Study: Texas Gulf Coast Focus on Infrastructure

On September 13, 2008, Hurricane Ike, a powerful Category 2 storm, slammed into the Texas Gulf Coast, coming ashore in Galveston and causing far reaching wind damage and severe inland flooding. The 29 Texas counties declared federal disaster areas were home to more than 26 percent of the state's business establishments. The Houston-Galveston Area Council (H-GAC) houses the Gulf Coast Economic Development District (GCEDD), which secured $10 million in EDA funding to capitalize a revolving loan fund for recovery and economic development efforts. The fund was used to assist area businesses and was expanded to support recovery efforts of local governments.

The H-GAC allocated $10 million to repair and modernize a facility that housed the University of Texas Medical Branch's biotech and biomedical incubator. H-GAC also identified a number of public infrastructure projects with significant potential to improve competitiveness of the region. The Port of Galveston, a primary source of jobs and economic output, was awarded $10 million in EDA disaster recovery funding to repair and upgrade port facilities. The funding allowed the port to increase its capacity and sparked private investment in facilities along the piers. The modernizations have allowed for additional cargo storage and better intermodal connections to the surrounding region.

Source: National Association of Development Organizations (NADO)

Pre- and Post-Disaster Activities for Businesses to Support Economic Recovery, Resilience, and Sustainability

Economic Resilience and Recovery Activities for Business

All communities and therefore all businesses are at risk from natural, technological, and human-caused hazards. Whether it be a fire that ravages a city block, a power outage, flooding, or civil unrest, it is important to understand the potential causes of business disruptions, identify existing vulnerabilities, and develop plans and resources to mitigate the potential damage that may be caused. Property Casualty 360 estimates that ***between 40 and 60 percent*** of small businesses do not reopen following a disaster.

From a grocery store that purchases a generator to maintain its freezers and refrigerated areas during a power outage, to a consulting company that establishes teleworking options when there are road closures, there are a number of actions that businesses can take to reduce the impact of a disaster. While the pre- and post-disaster activities outlined in this section will assist business owners in establishing recovery plans and improving resilience, they do not have to work through these actions in isolation. Assistance may be available from local chambers of commerce, economic development organizations, associations, and local emergency managers. In fact, working together will not only yield benefits for individual business but also improve coordination and communication mechanisms throughout the community by having pre-established relationships that are vital if and when the area is hit with a disaster.

Increasing the focus on economic resiliency is, at its core, an economic development activity. It involves taking proactive steps to improve economic performance and productivity

Appendix B summarizes the information included in this section as checklists for pre- and post-disaster activities for business.

Possum Kingdom Lake Fire (NBCDFW.com)

Pre-Disaster Activities for Business

Although the government and other organizations will do their best to support local economic recovery, ultimately businesses and workers are responsible for their own survival. So, just as there is an action plan for the public sector, there are actionable steps that the private sector can take to protect critical business functions and become more economically resilient. The information provided here, used in conjunction with the North Central Texas Business Impact Assessment and Planning Tool described in Appendix C, provides the foundation for a business continuity plan and outlines necessary steps for disaster mitigation and preparedness. The following areas of preparation and mitigation suggest ways in which business owners and operators begin planning for a resilient economic future.

1. Planning

Develop an evacuation or shelter-in-place plan

Disasters strike on their own time. Businesses should develop plans to evacuate personnel safely, or shelter-in-place if necessary, identify a "safe room" away from windows or other potential hazards, have appropriate first-aid equipment on site, etc. Evacuation planning should involve identifying evacuation points and should take into consider known risks. For example, the Lewisville Dam was listed by the U.S. Army Corps of Engineers (USACE) as one of the eight most hazardous in the country. Should the dam fail, the results could be catastrophic; it holds back 125 times more water than was held by the South Fork Dam in Johnstown when it failed in 1889, killing 2,209 people. USACE estimates that the combination of a flood event and breach could put 431,000 people and 53,000 structures at risk, as well as land and property of up to $21.1 billion.

Lewisville Lake (USACE)

Have a plan in place to move or protect critical equipment and inventory that are likely to be compromised

Preparing options to relocate critical physical elements of a business to a safer location will reduce the impact on the business if the structure is affected.

Develop a business continuity plan

A business continuity plan is a critical component of business resilience. More important than the plan itself is the process a business owner goes through to develop the plan. Asking the tough questions of what will need to be done when critical business functions are compromised will provide business owners with the foresight necessary to mitigate problems before they arise, and prepare for losses when they occur. Central to the business continuity plan is a business impact analysis (BIA) that identifies each critical function, assesses its importance to the business, and describes actions to take before and/or after an emergency occurs. Please refer to the Business Impact Assessment and Planning Tool described in Appendix C for more information on business continuity planning.

2. Structures and Equipment

Have appropriate insurance and levels of coverage for the full range of losses associated with likely disasters

Many times businesses think they are covered by current insurance policies only to find out later that particular hazards were not covered or that the extent of coverage did not insure the full value of losses. Businesses should identify likely types of losses due to tornados, floods, or other possible hazards, and confirm with their insurers that they have the level of coverage necessary to cover the full value of buildings and contents.

Encourage building owners to consider structural retrofits and disaster preparedness

If your business is located in rented or leased space, initiate a conversation with building owners about their plans to restore the building after a disaster. This simple preparedness step can improve clarity in the tough business decisions after a disaster. It is in the building owner's best interest to maintain space for paying tenants, so explaining to them how structural upgrades can protect their investments may provide protections that extend to the business itself. Similarly, encouraging the business owner to have good insurance coverage can improve their ability to return the building to working order.

Structure leases with opt-out or rent abatement clauses in times of disaster when use or access to buildings is limited

The value of a building for a renter or lessee is in its use. If the building is compromised after a disaster, continual rent or lease payments are wasted cash flow for businesses. Lease and rental agreements should be structured with opt-out or rent abatement clauses that protect the business in case a building is destroyed or heavily damaged.

Identify alternate spaces or potential colocation partners before a disaster strikes so there are fallback opportunities for siting business activity

The worst time to find a new space for a business is directly after a disaster when the market is congested with other business owners attempting to find space as well. It is useful to identify potential short-term rentals agreements that could be initiated if a primary space is compromised. Similarly, establishing "just-in-case" partnerships with businesses in other geographic locations can be developed to co-locate on a short-term basis. For example, a printing company could partner with an office supply store across town so that if either business was affected, one could move their operations into the space of the other. Choosing partners farther from one's own primary location reduces the likelihood that both spaces will be damaged, and choosing a partner closer to one's industry increases the compatibility of the two businesses in one space.

If there is a concern for site security, establish an arrangement with a security company to deploy to your business if a disaster strikes

Sometimes the losses from a disaster are not in direct damage, but from looting or other activities that occur while normal social protections are lacking. Having an agreement with a security company to immediately check on and protect business locations can reduce losses from theft or vandalism.

If possible, pre-register for site entry

When a disaster strikes, many areas are secured by first responders, and access is slowly granted to various parties. Businesses should check if local jurisdictions have a registration program for site re-entry, and register their businesses and employees for preferred access to business locations. If such a program does not exist, talking with local officials may encourage them to determine how to get businesses access granted in short order.

3. Utilities and Information Technology

Properly maintain all utility connections to buildings

Trimming trees of branches and other proactive measures can decrease the likelihood of wind or other hazards knocking out local connections to the power grid.

Keep an inventory of equipment to turn off or inspect during an outage

Businesses should keep a checklist of computers or equipment to shut down during an outage to avoid damage from power surges when electricity is reconnected.

Identify back-up utility sources

Having access to generators or other power sources can keep some business functions viable. Pooling the costs of back-up power with other businesses and sharing the equipment on a rolling basis can be a stop-gap measure for smaller businesses. In some cases, larger businesses can have their own micro-grids or their own water systems. For example, the 2011-2013 droughts across Texas left some jurisdictions in a reactive posture, scrambling to implement water rationing and wastewater recycling. Since 2008, however, Spansion, Inc. (now Cypress Semiconductor) in Austin had implemented new processes to reduce reliance on municipal water sources through a water recycling process called FAB25.[51] This process reused 1.3 million gallons of water per day and decreased its city water purchases by 22 percent. When the drought occurred this created mutually beneficial outcomes—Spansion maintained its productive capacity, and the Austin Water Utility had marginally less demand for water.

Carry business interruption insurance with appropriate coverages for utility loss

Not all business interruption insurance policies contain applicable coverages for water, sewage, and related losses. It is important for businesses to carry business interruption insurance and be sure that their policies will cover likely losses.

Protect electronic data through appropriate backups and redundant access

Electronic data is central to the operation of many businesses and requires multiple backups for thorough protection. Backing up data to cloud-based storage systems, as well as on hard drives and flash drives that can be stored off-site, will ensure that data is protected and always accessible. Appropriate data security should also be taken so backups are not compromised. Having a portable laptop, tablet, or other handheld device that can be used to access data is also important in case business computers are destroyed or relocation makes physically accessing them impossible. In 2003, Tennessee was hit by an F4 tornado that destroyed Aeneas Internet and Telephone's home office. Even though the physical building was gone, back-up systems were in place that allowed employees to work from other locations, and in less than 72 hours, Aeneas was able to fully serve all its clients needs.[53]

Damage to Aeneas Internet and Telephone (The Jackson Sun, May 11, 2003)

4. Transportation and Supply Chain

Plan for back-up modes and routes of transportation

If your business is dependent on specific modes of transportation like rail or air, it is advisable to prepare for receiving inputs or getting products to market through other means like ground or sea transport. Similarly, if major arterials or highways are compromised, it is good to have a back-up plan for the flow of inputs, goods, or customers. In some cases, it will be impossible to have secure access to a particular location if the only major road in and out is destroyed. In extreme cases, this may necessitate the availability of a temporary off-site location. Regardless of the situation, businesses should have maps of their area on hand and be familiar with different routes and transport types in order to plan effectively for transportation disruption.

Pre-verify transportation contracts in case of disaster

There may be a run on trucks, truckers, and other logistics businesses require during disaster response and recovery efforts. Having contracts for operations in place beforehand will better ensure that these partners support needs in time of crisis.

Diversify number and location of suppliers

If possible, having multiple suppliers in different locations can reduce disruptions to inputs, especially if the hazard happens in an area where suppliers are located. Look for suppliers with different deployment locations, which can help to reduce costs in normal business times, as well as creating flexibility during a recovery. Redundancies for inputs can smooth failures in accessing individual suppliers.

Request to see business continuity plans for suppliers

The success of a business depends on the functionality of its supply chain. It is therefore important to see the continuity plans of supply chain partners and ensure that they are prepared for relevant hazards. If they are not, this can help businesses identify key vulnerabilities and prepare for alternatives. Coordinated planning between supply chain partners can be mutually beneficial if a disaster occurs.

Prepare for surge or softening of demand

Following a disaster, some industries experience a surge in the demand for their goods and services while others experience a decline. It is important to forecast how demand might change for a particular industry and 1) how supply chain partners can serve in case of a surge and 2) what cash flow, warehousing, or contractual changes may be necessary to wait out the downturn. This should also include discussions with supply chain partners about extending credit periods and changing invoice timing for more flexibility in exchanging goods. This proved to be beneficial after the Northridge earthquake in California.[11]

5. Employees/Workforce

Encourage employees to create their own continuity plans

How will employees get to work? Who will take care of their children? Do they have savings to cover short-term losses in income? These are all questions that every employee should be considering in preparation for a crisis. Business owners should talk with employees about developing personal disaster plans, and consider the continuity issues they personally face in maintaining income opportunities. The extent to which business continuity plans and the continuity plans of individual employees can be integrated may reduce the gaps in employment that could harm either side.

Cross-train and/or externally source labor

Cross-training employees on different functions will allow them to fill gaps in labor when key members are lost to injury or dislocation, while providing an ability to maintain employment if their core functions are compromised. If current employees are unavailable, businesses should have relationships with labor organizations ready so that new employees can be sourced quickly and confidently.

Establish good communication protocols for employees.

Oftentimes the main issue with labor is finding and communicating with the workforce. Having emergency contacts for all employees, both phone and email, can facilitate locating and communicating with them after a disaster. Also, establishing a call-in number or recording a message for employees on the business voicemail provides another vehicle for employees to obtain important information and leave details about their situation.

6. Customers, Markets, and Procurement

When possible, diversify consumers geographically

Studies show that businesses primarily dependent on local markets experience greater difficulties than those who have diversified buyers in other locations.[2] Increasing buyers in other regional, state, or national markets that would be unaffected by a local disaster can help offset losses locally.[8] This can include building an online business that exists independently of geography or partnering with businesses in other locations.

Prepare for government contracting

Many businesses have goods or services that are in demand by governments after a disaster. Construction, surveying, small engine repair, food service, and a host of other industries support the staging of response activities, and the long-term reconstruction efforts. However, to apply for government contracts, businesses must have all applicable licenses, carry appropriate insurance, and be registered in the System for Award Management (SAM), which itself has requirements like a DUNS number, etc. After a disaster is not the time to prepare for taking government contracts; the process should be completed beforehand so that businesses are ready to go when the time comes. Moreover, getting into the system now can provide opportunities for new sales in the short-term even without a hazard occurring.

7. Finance and Financial Processes

Keep cash reserves

It may be difficult for small businesses to set-aside any significant amount of cash, but building up some form of savings or liquid assets is important for dealing with post-disaster issues. Especially if access to formal financing is slow, having some cash on hand to cover emergency issues (e.g., boarding up windows, pumping water out of a facility, etc.) will be necessary.

Protect and back-up all important business documents

Accessing any type of financial service after a disaster will depend on a business having all of its relevant business documentation in order. Incorporation papers, proof of location, proof of licenses, proof of insurance, three years of recent tax filings, audited financial statements, current financial statements, and a long list of other documents may be requested by the U.S. Small Business Administration (SBA), local banks, or other financial service providers. It is critical to keep all of these documents in a safe place, preferable in waterproof and fireproof containers. There should also be back-up copies stored in second (and even third) locations in case the originals are destroyed.

Keep good accounting records of post-disaster expenses

Usually, available post-disaster economic recovery programs require 'proof of loss' calculations to determine eligibility. Losses are most easily verified by comparing quarterly or annual tax information before and after disasters. Similarly, SBA loans are often calculated on the basis of pre-disaster viability, which may often depend on several years of tax filings to calculate the ability to service debt. Businesses often suffer through the qualification process for grant or loan aid because they cannot prove viability or loss.

Make sure to have the right kind of insurance

Businesses should be clear about what their policies do and do not cover, and have the appropriate insurance for the hazards that may affect them. It is always better to be over-insured than under-insured. Similarly, having business interruption insurance is important. Following Hurricane Andrew, it was found that 82 percent of South Dade County businesses had hurricane insurance, but only 35 percent had business interruption insurance.[9] This was a significant gap which left many businesses that did not experience structural damage unprotected for economic loss.

Don't rush into debt

A common reason for business failure is that businesses quickly take out SBA or other loans when a crisis occurs, but do not adequately understand the trajectory and timeline of the local recovery. Although they may have had a strong business before the disaster, a slow or non-existent recovery in their area may undermine their ability to repay loans, and eventually force bankruptcy due to the debt obligations rather than the disaster itself. In the case of SBA loans or other debt that requires pledging personal collateral like homes and/or personal guarantees, this can also severely impact personal financial solvency as well. It is important to exhaust all other financing opportunities before taking on debt and obtain sound financial advice regarding the parameters of financial recovery.

Discuss disaster preparedness with financial institutions

It is a good practice to talk with bankers and other relevant financial institutions about what their emergency plans and how they anticipate maintaining financial services after likely hazards. Also, having an idea of what they will require for accessing financing, or what their policies are on relaxing loan terms for businesses affected by disasters, will aid in planning for post-disaster financing.

Protect and plan for payment systems

Payroll and various payment systems should be protected if they are maintained in-house. Alternately, if they are maintained by third-party providers, discussing emergency plans with those institutions is also a good practice in order to understand how transactions will continue to be processed or received.

Post-Disaster Activities for Business

In spite of our best efforts to address vulnerabilities and prepare, disasters will occur and critical business functions will be disrupted. Having a recovery or business continuity plan that organizes key actions based on when they could/should be undertaken will help to focus efforts and provide a framework for restoration of services. The activities outlined below are not specific to a particular business sector or business size. Each business owner or recovery team should review these actions and identify which are applicable.

1. Short-Term

Maintain personal safety

Nothing is more important than the safety and security of the business owner, employees, and their families. Unless the area that the business is in has been declared safe by the relevant authorities, do not enter a disaster zone. Business owners should wait for instructions about re-entry and focus on the immediate needs of loved-ones and friends. Activities that may be taken to maintain safety include:

- Implementing the evacuation or shelter-in-place plan;
- Implementing the plan for protecting equipment and structures (including shutting off power); and
- Following news sources or official social media to keep aware of developments.

Implement the business continuity plan

The purpose of developing a plan is to use it. After securing personal safety and response issues, businesses should consult their plans and take action.

Deploy building security

If site security is an issue, when the disaster areas has reopened, deploy security personnel or check with the security company to ensure that location(s) have been visited and protected. In some instances, businesses may play a key role in providing parts and services necessarily for national security or manage elements of the nation’s critical infrastructure. In many of these cases, these businesses are already working with federal agencies under the NIPP and Sector-Specific Plans to ensure security of the facility. In these instances, emergency management, law enforcement, and federal partners need to be aware of the need for continue security.

Contact utilities /set-up back up power

Some businesses require immediate or near-term access to utilities. Setting up a back-up power system can either maintain operations or protect perishable inventory. Similarly visiting utility websites or contacting utility companies directly can identify how long utility disruptions may last, and help with short-term planning.

Gather paperwork

In very short order, there will be requirements to prove ownership or other connections to the business as various agencies determine who has been impacted by the disaster, or who can have access to sites. In the longer-term, it will be important to have business documentation available for recovery programs, procurement opportunities, and other support. Getting access to business documentation early, and keeping it close at hand during the weeks and months following a disaster, will ensure that various administrative needs are met.

2. Mid-Term

Access site and determine physical damage

Depending on the hazard, site access might be immediate, or it might take several days or more to enter a business location. You should consult with your emergency management office and/or building official first. Gaining access and determining physical damage to the business is required to determine whether a back-up location is necessary. If the neighborhood or area did not suffer physical effects of the hazard, then additional steps may not be necessary. However, in many cases site stability may not be obvious from simple observation. It may be necessary to obtain a building inspector to check whether or not the structure is ready for use. Do not use a structure that is unstable or likely to have hidden damages.

Check gas, water, and sewer connections for breaks or leaks

Similar to site stability, utilities may have issues that are not obvious at first glance. It is important to check gas, water, and sewer connections for breaks or leaks. In some cases (such as gas), it may be dangerous for unqualified persons to do this on their own. Always engaged a trained professional to assess utility damages if there is a possibility of fire or explosion.

Communicate with employees

Implement communication protocols to let employees know the status of the business, and whether or not it will be closed. Also, inquiring about their condition will provide good information on the stability of staffing, and maintain interpersonal connections.

Contact suppliers and transportation partners

Similarly, businesses should contact suppliers and transportation partners to inquire about their status, and let them know the condition of the business itself. Early communication can help stabilize logistics and supply chain access later on.

Contact insurance carriers and bank

Businesses should establish access to capital early in the recovery in order to ensure liquidity, and determine if they will experience a cash shortfall. If there are damages for which insurance coverage has been purchased, contact the carrier to initiate the claims process. This will often take much longer than usual because the number of claimants is much greater than the number of adjusters available. Also, banks or other financial institutions should be contacted to confirm access to funds, and whether there are any special procedures they have implemented during the disaster response.

Communicate with customers

There is a great deal of confusion after a disaster, and many people do not know which businesses are open or closed. It is important to reach out to customers directly and let them know that a business is operational, where it may have relocated, and what goods or services it may be providing that are applicable to the new context. This might involve social media, local media, print, radio, or television. This also holds for businesses with out-of-area customer bases; it is important to let them know how the business has been affected by the disaster, and if they have reopened for business and to what level.

3. Long-Term

Visit the Business Recovery Center

Business recovery centers (BRC) often launch shortly after a disaster to serve the business community in accessing recovery resources, small business technical assistance, and other services. They should usually have representation from different governmental and non-governmental agencies and serve as a one-stop-shop for business support and referrals. It can be highly beneficial to visit the BRC and find out about what is offered in the local area.

Seek technical assistance

A disaster will be a confusing time for businesses. There are many changes to the economy, and many new needs that entrepreneurs have not experienced before. There is no reason to face these challenges alone, especially when there are usually technical assistance resources available through non-profits, community colleges, and universities. For example, following the 2015 Garland tornado, Eastfield College and the Dallas County Community College District presented a series of training sessions on filing insurance claims, hiring contractors, and other topics relevant to small business. Before investing capital into recovery, every business should get advice from business coaches, accountants, lawyers, or other professionals depending on the need of the business. Finding out about changing regulations and bylaws can also prevent wasted time and resources during rebuilding. Developing a quick business plan, or getting more information about different options going forward can be the difference between success and failure.

Collaborate with other businesses

Although businesses are usually in a mode of competition, after a disaster the businesses that survive are the ones who learn how to collaborate effectively. Finding other businesses to share space with, purchase goods with, plan transport or shipping with, etc., have better opportunities to cut costs and increase access to inputs and markets. Often these businesses will be within the vertical value chain of one's sector, or even businesses that are typically direct competitors. One way to engage with other businesses is to use Craigslist or other web services where entrepreneurs and workers might be posting ads for cost-sharing or other opportunities.

Provide services for employees

Although many issues affecting employees are beyond the control of business owners, some issues can be addressed. For example, following Hurricane Katrina, the owners of Mother's Restaurant (home of the "World's

Case Study: North Central Texas "Coopetition"

The Dallas-Forth Worth (DFW) Marketing Team represents 90 local jurisdictions, and was established in 2003 when communities and regional organizations (including the Dallas Regional Chamber and the Fort Worth Chamber) came together to create an alliance focused on marketing efforts. While each community has its strengths, the Marketing Team attempts to create a synthesized, cohesive brand.

Along with marketing, DFW has also established regional approaches to other areas, including advancing legislation to provide funding to develop long-term water resources, without which the region could have lost over 745,000 jobs by 2060. These organizations also worked together in forwarding legislation to consider a constitutional amendment to generate funding for transportation projects throughout the state. Through these types of collaborative efforts, the region continues to prosper and enjoy economic growth and prosperity.

Source: David Berzina and Mike Rosa, Economic Development Journal, Spring 2014

Best Baked Ham") secured nine FEMA trailers and placed them in their parking lot for their employees and families. They maintained this arrangement for nine months while their employees continued efforts to meet their housing needs.[24] Not only did this sustain the business and employees during the worst part of the recovery, it also deepened employee loyalty and retention. Similar activities, like establishing transportation sharing arrangements, facilitating technical assistance and support for employees' personal issues, and providing short-term loans or credit, can help smooth employee-related issues and keep a business's workforce engaged.

Where possible, use flexible work hours and locations

Shifting operations to other times of day, allowing employees to work off-site, or building smaller teams of employees that can work together at different times can allow continuity of operations where a standard on-site, 9-5 schedule may not.

Seize opportunities after a disaster

It is important for every business to consider that consumer interest will usually change after a disaster, and that adaptations will be required for the business to survive. This may involve finding a niche in the post-disaster economy with a bit of ingenuity and a well-executed pivot. Retail stores can change product selection to cater to changing needs. Professionals like lawyers and accountants can repackage services for dealing with disaster-related issues. Even highly elastic industries like luxury goods and entertainment can market directly to contract recovery workers who might have extra money to spend. To succeed, it is important for businesses to forecast how they might fit into a recovery economy and prepare the supply chains, services, and marketing that might be beneficial. Additionally, if the business provides relevant services, checking for federal procurement opportunities on SAM can yield short-term opportunities.

Participate in the post-disaster community planning processes

Disasters are overwhelming for everyone, and it is difficult to take on extra responsibilities; however, if businesses are not engaged in the political and planning side of the recovery, their interests can be poorly represented. If recovery plans and programs are to meet the needs of local businesses, vocal participation by businesses in planning processes is necessary. Interested businesses should enquire at the Chamber of Commerce or BRC to find out more about recovery planning, and what community forums might be available.

Consider all your options

Businesses are usually more than just an income opportunity for entrepreneurs. They also provide a sense of accomplishment and a way of living for those who operate them. A disaster can threaten all of the values that a business owner receives from their venture, and despite best efforts there comes a time when a business may need to close. According to SBA, over 90 percent of businesses fail within two years after being struck by a disaster. This decision may be based on demand changes after a disaster, inability to afford rent in a new location, a lack of capital for rebuilding, or it may be the “final straw” for a business that was already experiencing economic hardship. Investing more capital or taking on more debt may not revive a business that was in trouble before the disaster, and can result in both firm failure and personal bankruptcy. It is important to get advice from experts about the potential for a business’s longevity in its industry or location, and consider carefully whether reinvesting into the business will yield profitable results. If not, getting technical assistance for planning for a transition into new work, a new venture, or retirement can help in maximizing the remaining assets of the business.

Pre- and Post-Disaster Activities for Local Government and Emergency Managers to Support Economic Recovery, Resilience, and Sustainability

Activities for Emergency Managers

Although we generally view emergency management cycle in terms of its disaster response activities, at a more fundamental level it is a process of community development, protection and growth. The pillars of emergency management are preparedness, protection, mitigation, response, and recovery. The hallmark of their work is effective coordination across the full spectrum of the whole community. As more focus is put on the challenges of long-term recovery, the success of a community's economic recovery will in some small measure be dependent on emergency managers fulfilling this coordination role.

Why Coordinate with Business?

"Coordinating support for the needs of the private sector may be critical to saving businesses and jobs in the community and ensuring a viable recovery. The private sector has a wealth of data and subject matter expertise that can help to inform recovery decisions and more effectively and efficiently address economic and community recovery needs. Large corporations and other private sector networks may be able to access non-traditional financial resources to facilitate local private sector and wider community recovery."

Source: Effective Coordination of Recovery Resources for State, Tribal, Territorial, and Local Incidents (FEMA, February 2015)

Gays Mills is a small village on the Kickapoo River in Wisconsin that flooded in August 2007 and again in 2008. In support of recovery efforts, Wisconsin Emergency Management brought together a group of stakeholders, including economic development officials, planning experts, architects, and state and federal representatives.[54] This highlights the key role that emergency managers can play in economic recovery: bringing together partners and stakeholders to discuss issues, identify potential solutions, and establish a plan for restoring the community.

The following discussion highlights steps that can be taken to lead and support economic recovery efforts and increase the community's overall resilience. No community because of budgetary constraints is likely to implement all of the recommendations listed here. In addition, while communities and emergency management organizations may not have the capacity or capability to execute these actions in and of themselves, through their coordination network, emergency managers can provide the spark to partners throughout the region to accomplish much of it. Appendix A summarizes the activities outlined in this section into checklists for pre- and post-disaster activities for local elected officials and emergency managers

Pre-Disaster Activities for Local Government

There is much that can be done prior to a disaster to better prepare a community and to alleviate confusion and planning demands after a disaster occurs. Through pre-planning efforts, emergency managers can begin to develop post-disaster recovery strategies, identify organizations structures, and establish key partnerships and relationships. To facilitate completion of these activities, emergency managers should leverage their coordination expertise and what has already been accomplished in the community to bring together public and private sector stakeholders with an understanding of economic development to accomplish these activities.

1. Economic Analysis

The right time to begin asking questions about drivers and trends within the economy is now. Post-event damage assessments will be compared to pre-event baselines of economic activity in order to establish a loss profile. This profile often used to form a "mission scoping document" will serve as the basis for a recovery support strategy which outlines various federal and state programs that can be used to stimulate and support recovery efforts. When this pre-event profile is absent understanding losses becomes problematic and potential solutions are delayed.

Conduct Hazard Assessments

Performing assessments in regard to various hazard types is important for delineating how hazards may interact with the local geography and economy. Using FEMA-based tools such as Mitigation Planning How-To Guide # 2 (FEMA 386-2, which provides step-by-step guidance on how to perform a risk assessment), HAZUS (a standardized methodology that contains models for estimating potential losses from earthquakes, floods and hurricanes), and the THIRA can provide important data on what hazards are most likely for a given area, and what the extent of the damage could be. Using tools like the Social Vulnerability Index (SoVI) (http://webra.cas.sc.edu/hvri/products/sovi.aspx) can also identify populations that are more susceptible to hazards based on a variety of demographic and economic characteristics.

Ultimately, the value of such assessments is their relationship to the other analyses. By connecting economic weaknesses or threats, the physical geography of the economy, and the predicted behavior of particular hazards, planners can not only recognize businesses that are in disaster prone areas, that have structural vulnerabilities, but establish linkages to other businesses and industries that may be in a position to support them during a worse case scenario.[20] Further, understanding these vulnerabilities can inform mitigation and recovery plans, while local authorities can narrow in on areas, industries, or populations that need additional attention either before or after a disaster occurs. This will maximize investment, and better prepare stakeholders for reacting to different scenarios.

Conduct Economic Asset Mapping

Asset mapping is a type of analysis that focuses on identifying the various “capitals” of a community or economy that contribute to its resilience and growth. This mapping can be either geographical, representing the assets on an actual map, or simply through lists of important sites and valuable entities. A comprehensive asset map can help economic developers and disaster planners better understand the parameters of the economy, both positive and negative, which will feed into other analyses like the SWOT (strengths, weaknesses, opportunities, threats) analysis. Different capitals represented in asset mapping include the following:

- *Natural Capital* – Topography, mineral resources, locational advantages, etc.
- *Human Capital* – Demographics, skills, labor potential, education, etc.
- *Financial Capital* – Banks, investors, disposable wealth, etc.
- *Physical Capital* – Buildings, equipment, infrastructure, etc.,
- *Political Capital* – Powerful institutions, people, etc.
- *Social Capital* – The types and quality of connections between people.
- *Cultural Capital* – The values and interests of the community.

Conduct Physical Economy Mapping

Although many cities and counties have zoning or land use maps that identify where commercial and industrial activities take place, it is less likely that those maps will contain information about economic dependencies, growth hot spots, or similar data. For example, if there is an oil spill in the river, what businesses depend on water intake? Are they congregated in a particular area that could be designated an “economically sensitive site for protective booming”? Is there a commercial corridor that is particularly vital for at-risk populations that should receive priority debris removal or emergency technical services? Are there primary transportation routes for particular industries that can be identified for mitigation or preparedness activities so they are less vulnerable?

These data points can be uploaded as overlays into geographic information systems (GIS) of land use maps and be used to correlate key information. Comparing these visual representations of the economy with relevant hazard assessments for the area can demonstrate areas of concern that will prompt better planning for resilience and recovery.

Figure 3 (below) is taken from the Association for Neighborhood and Housing Development which developed a mapping tool for neighborhood and civic leaders to use. It shows aggregated data on numerous economic indicators by neighborhoods in New York City to identify low- and high-risk economic areas. In Figure 4, Ellisville, Missouri, mapped their commercial corridors while identifying key nodes, incompatible land uses, and poor building conditions. Besides allowing for adaptive reuse planning, this map could also be repurposed for economic recovery planning by showing how hot spots might be affected by particular hazards, or which areas should receive infrastructure investments or incentives.

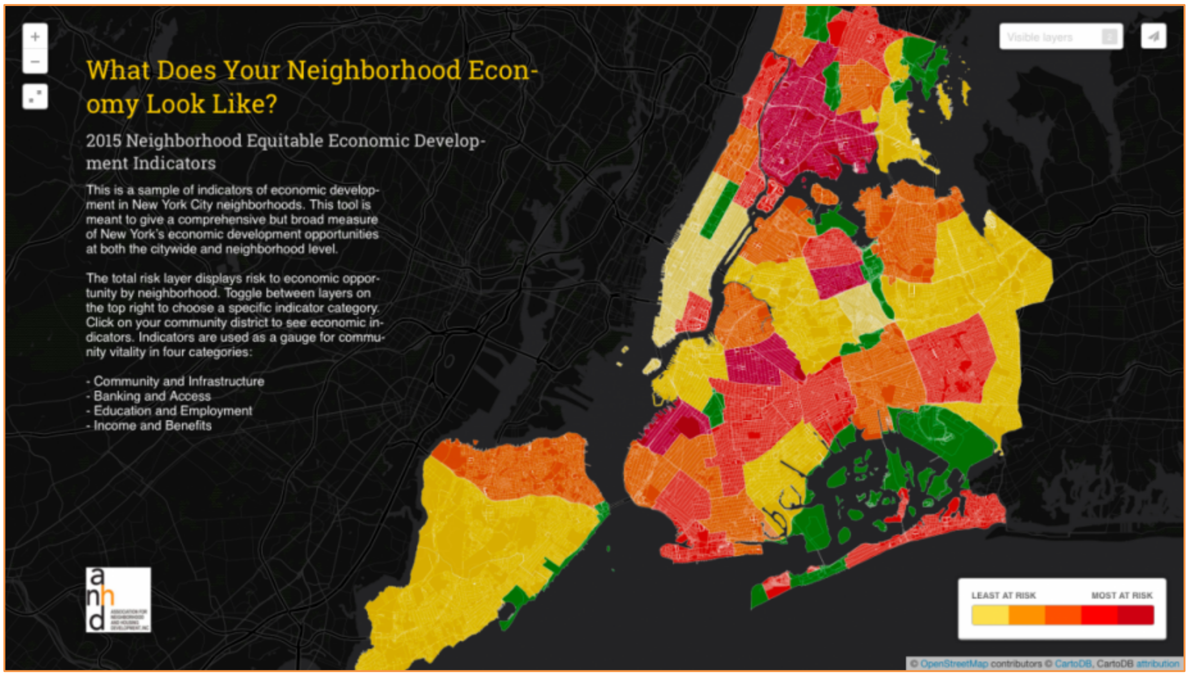


Figure 3: New York City

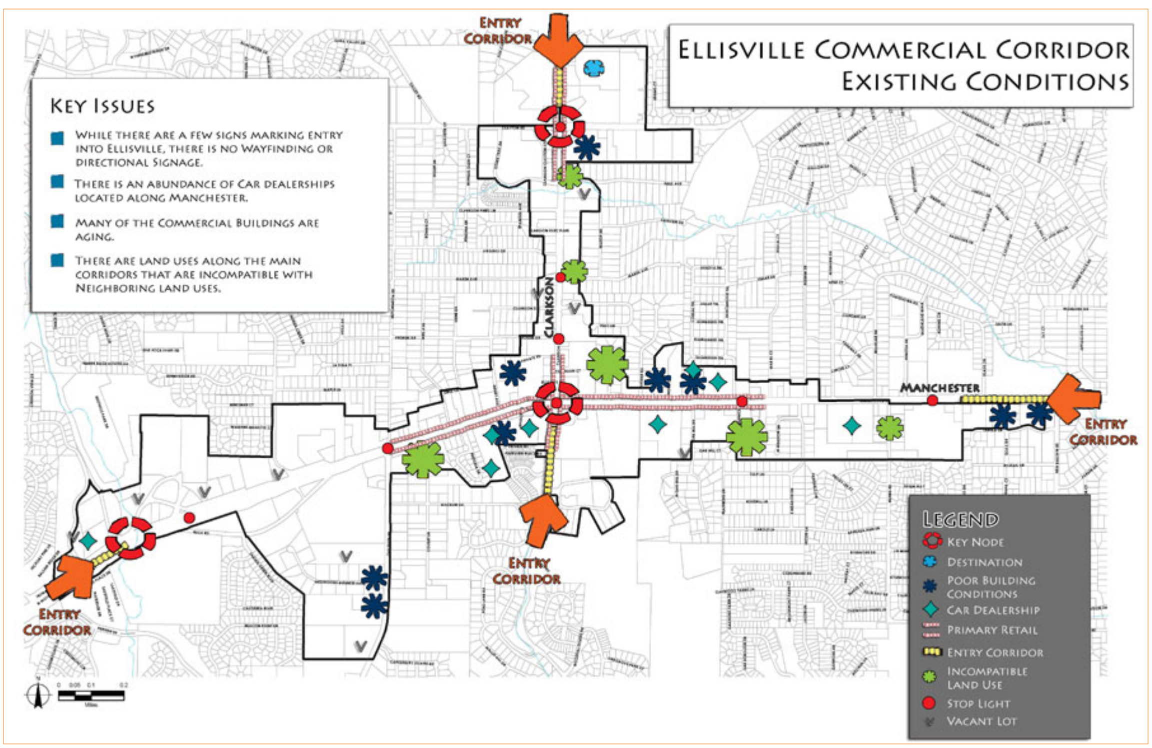


Figure 4: Ellisville, MO[1]

[1] Accessed from: http://www.pgavplanners.com/expertise-experience/community-planning/ellisville-corridor/

Conduct Economic SWOT Analysis

What are the strengths, weaknesses, opportunities, and threats for the local economy? Economic development agencies should already have this information as a component within their strategic planning documents, but if the plans are limited or non-existent, at a minimum a SWOT analysis should identify:

- *Strengths.* What are the economic assets of the community? What industries are stable, and which ones are growing? What resources are available that fuels economic development (i.e. education levels, strong capital investment, location, etc.)?
- *Weaknesses.* What does the community lack in terms of inputs, processes, or industries? Is it a "one-horse-town" in terms of economic activity? Is the workforce vulnerable to economic change? Identifying the limitations of the current economic landscape can present opportunities for investment and action. For example, Wimberley is a small town in Hays County that flooded in 2015. A popular tourist destination, it does not collect ad valorem taxes and relies on the collection of sales tax. A decrease in tourists led to concern that the diminished tax revenue would affect the city's budget.
- *Opportunities.* What are the opportunities for growth and diversification? Are there possibilities for innovation or expansion in the community? What actions are possible that will drive economic performance forward?
- *Threats.* What are economic trends and potential challenges in the future? How is the economy changing and how will the primary industries fare in those changes? How is offshoring and automation impacting wages and job opportunities locally? How susceptible are local businesses to any type of economic shock, either natural or man-made? Oftentimes the effects of disasters are amplified by ongoing deterioration of the economy generally; minimizing routine economic challenges may provide disaster mitigation benefits as well.

2. Coordination Activities

Just as the heart and soul of a business are the people who make it work, the essence of economic resilience planning depends on good people working together to support the economy. From early on in the planning process, it is necessary to build networks of government staff, partner organizations, and business leaders who can be called upon in times of crisis, and who already understand their roles in economic disaster recovery. Designing and implementing economic resilience networks should include a variety of stakeholders and practices. The Whole Community concept used to support emergency management activities can be leveraged to also support economic recovery and resilience. After the 2013 tornadoes in Oklahoma, the Oklahoma Office of Emergency Management and Oklahoma Department of Commerce established a steering committee based on input from a business stakeholder group. With a focus on leveraging existing resources and building on area expertise and assets, an economic resilience framework was adopted, acknowledging the importance of developing a "resilience industry."[55]

Establish an economic resilience task force

There has to be buy-in and coordination among the various entities that will be involved in economic resilience and recovery. Disparate, disorganized efforts may lead to disarray or simple half-measures. Establishing a task force early on can be used to educate relevant stakeholders on the necessity of economic resilience and demonstrate how they can be involved. This can also be an opportunity to discuss the costs of resilience, and begin to understand the extent to which the community is willing to participate in and support resilience investments.

In Galveston, the non-profit Galveston Economic Development Partnership (GEDP) established the Hurricane Recovery Task Force, which focused on evaluating economic impacts from potential hurricanes, and assessing what actions could be taken to support the business community in education and preparation for recovery. Following Hurricane Ike in 2008, the Hurricane Recovery Task Force evolved into the Business Recovery Task Force, and began working with the public sector to enhance utilization of local businesses for recovery services and well as meeting the needs of the business community.[39] Similarly, the Downtown Dallas Emergency Response Team and the Victoria "Partners for Preparedness" are public-private partnerships that engage, educate, and plan for economic resilience as part of their activities.[40]

Task force members should be leaders in the community and be able to communicate the value of resilience to their constituencies. If economic resilience is a priority, jurisdictions will need ambassadors who can engage the public and motivate resources. Choosing individuals with the capacity to spearhead and manage various initiatives will also result in objectives being achieved. Strategic selection is critical to maximize the benefit of this group.

Increase partnerships between utility/transportation agencies and the economic development community

Dialogue between the business community, utility providers, and local public works agencies is important to better understand the needs of local businesses and how lifeline losses impact them, as well as the likelihood of utility losses after particular hazards and the possible downtime businesses might experience. Similarly, developing and maintaining partnerships with trucking associations, ports, and regional transportation authorities can aid in planning for transportation redundancies and ensure communication lines are already established when necessary. Holding workshops, roundtables, and policy working groups between various stakeholders can result in better planning both on the supply and demand sides.

Likewise, the more interconnections and relationships that exist between relevant agencies themselves will increase the chance for redundancies and cooperation. On the utility side, sharing water or inputs like liquid chlorine, establishing mutual aid plans between providers, and other collaborative measures can mitigate the loss of utilities in a specific area.[19] Following the Loma Prieta earthquake in California, the Pacific Gas and Electric Company (PG&E) implemented their mutual aid agreement with Southern California Gas (SCG) which addressed emergency inventories, resources, and labor sharing. With assistance from SCG, PG&E restored disrupted gas services 200 percent faster than the projected timeline.[20]

Increase bank partnerships with CDFIs and non-profit financial institutions. Discuss economic recovery planning with them.

Access to capital is critical for firms after a disaster, so motivating the financial community to be involved in recovery planning is essential. Community Development Financial Institutions (CDFI) and other non-profit financial institutions usually have access to loan and grant funds that are not available through traditional banks. Moreover, they can usually operate with lower underwriting thresholds that target more at-risk populations. In many markets, traditional banks are not aware of how beneficial partnerships with these types of institutions may be for recovery efforts. CDFIs can utilize program-related investments (PRIs) to invest into the community and provide banks with their credits; they can blend bank funds with their own funds to reduce risk and interest rates for loans to businesses; and they can act as second-look partners who can fund businesses initially, and refer them back to the banks when they are ready for formal financing. These relationships can be extremely important to the local economy even at the best of times, but they can also be refocused in times of disaster to provide financing to businesses that normally cannot access bank funding.

Increase partnerships with workforce and labor organizations for employee/employer matching

Workforce Investment Boards (WIBs), temporary labor agencies, One Stop Centers, unions, and other placement services are critical partners for connecting the affected workforce with employers in need. Forming a network of labor providers who can assemble after a disaster and guide employer-employee matching is a good practice, while integrating matching services into official post-disaster communication can help make the appropriate connections.

Explore partnerships with local non-profits for economic recovery

Depending on the community, there may already be a cadre of economic development professionals who have mandates to support economic resilience whether or not they realize it. Chambers of commerce, trade associations, farm bureaus, Small Business Development Centers (SBDCs), community colleges, community development corporations (CDCs), neighborhood business associations, business improvement districts (BIDs or BIAs), incubators, accelerators, and other similar entities all have resources and expertise that they provide businesses every day. They have member networks, communication and marketing outlets, training programs, funding streams, equipment or space sharing arrangements, and local knowledge that can be relied upon, utilized, and repurposed for a variety of planning and recovery needs.

Similarly, engaging local corporations with risk management departments can utilize expertise that is already inherent in the business community and can be used to educate and prepare others. In planning for economic resilience, it is important to map what services are already available and determine how these can be used to prepare for disasters and disaster recoveries while identifying gaps in service provision that will need to be filled later. There is no need to reinvent the wheel or create programming that duplicates non-profit or private sector efforts. Effective partnerships engage the community, lower costs, and maximize the impact of economic resilience investments.

Incentivize or invest in capacity building programs for local organizations

The non-profit sector and other partners are often on the front lines of economic disaster recovery. They provide case management with affected businesses, provide application assistance for relevant state and federal programs, and implement programs that are funded by federal and philanthropic dollars. While one can identify partners who represent or work with particular business communities, it is not guaranteed that they will have the capacity to serve them well. Post-disaster programs introduce complicated qualification and reporting requirements that few organizations have ever experienced and that many may fail in delivering. This is problematic both in the sense that poor execution wastes taxpayer funds and squanders opportunities to support economic recovery and also in the sense that it can harm businesses if implemented incorrectly—either through limiting access to resources or through failing ex-post audits. Local governments and economic development agencies should look critically at the capacities of partner organizations to determine if they have the experience, staff, and resources to implement recovery programming. This might include asking questions like:

Case Study: Efficient Use of CDBG Funds in Grand Forks

In April 1997, the Red River experienced a "210-year flood" in Grand Forks, North Dakota. It is estimated that the area suffered $3.5 billion in damages, and at the time less than 10 percent of residents had purchased flood insurance. The greatest physical damage occurred in the central business district. Approximately 750 commercial buildings (60 percent) were damaged and over 5,200 businesses were damaged or adversely impacted. Within days of the disaster, a group of local business leaders volunteered their services to assist economic recovery efforts, which lead to the development of the Mayor's Task Force on Business Redevelopment.

The area's economic recovery is largely credited to the city's efficient use of federal funding, including Community Development Block Grant (CDBG) assistance. Funds were used to partially finance a flood protection system, provide direct assistance to businesses, purchase strategic city properties, and hire staff to assist with recovery planning.

Grand Forks leveraged the strategic investment of its CDBG funds as well as other financial assistance to retain its residents and businesses. At the same time, the city invested in mitigation and resiliency programs and diversified its economy.

Source: Recovery and Resiliency Roadmap: A Tool for Economic Preparedness

- Do they have any interest in serving in the economic recovery process?
- Have they ever managed federal programs through CDBG or other allocations?
- Have they ever been through formal federal or state audits?
- Have they ever managed intake centers or done case management?
- Do they have systems for maintaining records on hundreds or even thousands of clients?

Depending on the answers to those questions, appropriate steps may need to be taken to build capacity and train organizations on their own roles in a recovery. This can utilize resources from U.S. Department of Housing and Urban Development (HUD), FEMA, or other agencies that can provide information on requirements and necessary actions that implementation partners would need to undertake.

3. Economic Recovery Plans

While most jurisdictions have traditionally developed emergency response plans, they have only recently begun developing recovery plans.[2] The emergence of the NDRF has pushed communities across the nation to consider how they will deal with various aspects of disaster recovery and improve pre-disaster recovery planning. This is of critical importance because in the wake of a disaster, there is little time for decision-making, and plans made in the moment of a crisis have a higher likelihood of being poorly developed.[12] The dynamic and ever-changing nature of disaster response and recovery operations necessitates the need for a flexible and adaptive planning process that will allow organizations to deal with issues as they arise in the post-disaster environment.

Pre-disaster response and recovery planning should be a core aspect of economic disaster preparedness. Although the activities described in this section are primarily those that happen after a disaster occurs, the associated planning should happen far in advance. This planning can take place on the city or regional level and can also be part of the planning for economic development agencies and chambers of commerce. Any actions that reduce recovery times and expedite the allocation of resources are a net benefit for economies.

Identify department roles and organizational charts for economic recovery planning

The discussions around disaster response and recovery can often involve a narrow group of people—emergency managers, public works employees, and first responders. However, once a recovery commences, its responsibilities ripple through local government offices. Almost everyone is implicated in some way—financial services, legal services, government communications, code compliance, parks board, the auditor's office, etc. When economic recovery plans are developed, it is important to engage with various departments to understand how recovery efforts will impact their operations and how they can better serve in implementation. Giving clear and concise roles to each department, as well as involving them in response and recovery exercises, will decrease the confusion that can result after a hazard occurs. Moreover, it is important to understand staff capacities and how this may limit the scale-up of recovery operations. Establishing memoranda of understanding (MOUs) with other jurisdictions and establishing a volunteer corps of accountants, planners, and other skilled labor in the community can provide the surge capacity that is needed to augment local government.

Coordinate planning efforts with related plans and planning agencies (for example, regional emergency management plans) and the NDRF

Too often plans are developed and operated in silos. Economic development plans are made by economic development organizations (EDOs) and implemented internally, while disaster response and recovery plans are developed by emergency managers. The same is true for land use plans, bylaws, and other planning tools. However, there is natural overlap between all of these documents, and there should also be overlap in their development as well. Plans should reference each other and be developed in tandem so that they work together as a comprehensive approach to development and recovery. Economic developers, land-use planners, and emergency managers should discuss the interdependencies between their work, and how procedures can be aligned for mutual support. Economic recovery plans should also be included in table-top and other exercises where response protocols are tested and improved.

As described earlier, the NDRF allocates federal support to various recovery functions, including economic recovery. Although the Economic RSF is only activated after a disaster occurs, the relevant agencies are involved in all phases of the emergency management cycle, making sure that government agencies are ready to support local communities in economic resilience. Local economic stakeholders should ensure that their efforts are in line with protocols established under the NDRF, and that they are familiar with their counterparts in relevant agencies like the Department of Commerce.

Propose BRC locations and back-ups

After a disaster, a business recovery center (BRC) should be established. BRCs centralize resources for economic recovery so that business owners and other affected entities can easily access resources, information, and services. BRCs are often called one-stop shops since they will house federal, state, and local resources, and provide an opportunity for businesses to interact with many different service providers in one visit, or in one place. They may be led by either local EDOs or by government agencies; either way, this should be determined beforehand. BRCs may need to be open for a long time – from several months to over a year depending on the type of hazard – so preparing for a long-term space is important. Some best practices for establishing the BRC include:

- <u>When possible, utilize an already recognized economic support location.</u> Choosing an SBDC, chamber of commerce, or other location that is already used for business support can make it easier for businesses to find, especially if they are already accustomed to going there.

- Consider whether multiple BRC locations are necessary. The goal of a BRC is to get people in the door to access services. Depending on the disaster, though, the impacts might be widely dispersed, or some affected populations may have mobility issues that prevent them from visiting a single BRC. In these cases, establishing more than one location can increase access, though it will also require more resources. One approach is to establish centers that deal with clusters or prominent industries. For rural businesses, establishing an agricultural BRC in addition to a more general retail and small business BRC might better serve clients and provide additional services that are tailored to agricultural businesses. In some cases, mobile service operations can be used to access remote or heavily damaged areas.
- Be prepared with back-up locations. Identifying multiple locations for a BRC is also important in case the initially preferred or planned for location is compromised. Similar to other aspects of disaster recovery, it is important to build in redundancies for the BRC.
- Be inclusive of multiple partners and agencies. If businesses have been dispersed due to a disaster, it is also likely that services will have been dispersed as well. It may be difficult for business owners to track down the various agencies and providers that they need to deal with individual issues. BRCs should therefore be inclusive of different partners and agencies, making sure that a spectrum of information and support is provided in one space. Co-locating state and federal agencies with city permitting officers, local banks, technical assistance providers, and others can maximize the experience for businesses and provide access to services they may not have been previously aware of.
- Establish areas for privacy when possible. Many business owners are wary of discussing their personal details with strangers, and much less so in crowded public places. It is important to have some private areas like cubicles, partitioned desks, or separate offices, so that privacy can be provided for those who request it.

Identify locations for "commercial triage" where small business can relocate

Emergency managers routinely identify sites for evacuees or injured residents to congregate after a tornado or terror incident occurs. Spaces like high school gymnasiums, community centers, or other large facilities are usually commandeered to shelter affected persons. This same model can be applied to the private sector for businesses that can carry on operations but only need temporary space to do so. Utilizing businesses, public buildings, technical schools, accelerators/incubators, and other available commercial or industrial spaces can allow businesses to continue providing products and services, while also becoming hubs for citizens to go for necessities if their local commercial corridors are heavily damaged.

Identify alternate transportation routes for businesses and workforce

Being proactive in scenario planning for alternate truck and transport routes can reduce logistics confusion in a crisis. Developing maps or mobile applications for truckers to consult in an emergency can help reroute traffic to areas where the infrastructure can support them. Also, easing restrictions on truck routes by allowing alternative surface streets to be used can provide short-term logistics opportunities.

Similar to business needs, different communities have different workforce commuting patterns. Some workers commute outward, while others commute inward. Understanding where labor travels regionally can identify weaknesses or threats to the local economy, and will suggest what other municipalities or regional governments should be partnered with to establish or incentivize post-disaster commuting services.

A related example of transportation pre-planning was the NCTCOG Snow and Ice Plan that was developed and implemented with the Texas Department of Transportation (TxDOT) for Super Bowl XLV. Partnerships with road crews across Texas, donations of magnesium chloride from TxDOT, and pre-event live test-runs enabled a smooth response to ice and snow storms that occurred during Super Bowl Week. Not only did scheduled events continue as planned, but the economic impact of the storms was clearly reduced.

Establish guidelines for relaxation of regulations concerning home-based businesses and commercial/industrial zoning

Allowing businesses to operate in unconventional spaces in the short-term after a disaster can allow them to survive until their primary spaces are returned to use. Homes, garages, parks, parking lots, and other areas could be areas for short-term economic activity while the area recovers. Relaxing zoning restrictions for a specified period (e.g., six months, one year, etc.) can allow the economy to flourish and then be scaled back to normal as the recovery tails off. Establishing guidelines for this purpose in the recovery plan is a good practice.

Establish guidelines for reduced building inspections and code enforcement to get safe spaces approved

One of the core challenges for rebuilding is the tension between enforcing/improving building codes and ensuring a quick pace of return. Some communities see a disaster as an opportunity to "build back better" by increasing the quality of building codes. However, this can make it more difficult for businesses to return, and can eventually force them into bankruptcy if they cannot get reopened quickly enough. There is no right answer, but examples of streamlined post-disaster code enforcement have demonstrated great success for economic resilience.

Plan for local procurement set-asides

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) is the legal framework that guides disaster relief and recovery in the United States. From the mid-1970s federal law has emphasized the importance of local businesses in disaster recovery, and both the Stafford Act and the Federal Acquisition Register (FAR) has codified the use of local businesses for post-disaster contracting.[27] This includes the ability to use set-asides and evaluation preferences to privilege local businesses and employees through the bidding process for contracts. Specific provisions include the following:

- *Preference for local businesses*: Section 307 of the Stafford Act states: "In the expenditure of federal funds for debris clearance, distribution of supplies, reconstruction, and other major disaster or emergency assistance activities which may be carried out by contract or agreement with private organizations, firms, or individuals, ***preference shall be given, to the extent feasible and practicable, to those organizations, firms, and individuals residing or doing business primarily in the area affected by such major disaster or emergency*.**"
- *Preference for small businesses:* Subpart 26.2 of the FAR stipulates that contracting officers issuing bids for in declared disaster zones shall "determine whether a local area set-aside should be further restricted to small business concerns in the set-aside area."
- *Preference for local sub-contractors and local employees.* Subpart 26.2 of the FAR also stipulates that local area set-asides or evaluation preferences must include restrictions on sub-contracting outside of the disaster area, and requirements that 50% of the contract cost must be spent on employees residing in or primarily doing business in the disaster area.[28]

However, the use of these provisions has been limited. Following Hurricane Katrina only 14 percent of federal contracts went to Gulf Coast small businesses, and even after reform legislation was passed in 2006, a recent U.S. Government Accountability Office (GAO) study found that the implementation of set-asides for local small businesses and labor is still grossly inadequate.[29,30] A year after Hurricane Sandy hit, SBA found that only 25 percent of Sandy-related prime contracting dollars had been awarded to small businesses. This is primarily a function of a lack of awareness on the local level. Many local government officials are wary of being too "innovative" in post-disaster procurement for fear of losing reimbursements from FEMA. Without properly understanding what the legislation allows, local governments neither implement local procurement bid procedures, nor do they demand that federal agencies maximize local procurement opportunities or monitor contracting procedures for local benefit. Learning the Stafford Act and FAR codes for local area set-asides and evaluation preferences should be a central objective for governments, and plans for utilizing them should be the first line of offense in economic recovery. Training local staff on these procedures are important as well.

Plan for post-disaster rapid economic assessments

After a disaster occurs, data on the economic impacts of a disaster will be needed almost immediately. Establishing the breadth and depth of disaster effects will determine the design and implementation of recovery programs, so doing both rapid assessments and on-going economic impact analyses are necessary. By establishing procedures for conducting these assessments and identifying data sources prior to a disaster, communities will be better positioned to provide needed data and thereby make the recovery process more efficient. Practices that can aid in the development of relevant assessment protocols include the following:

- <u>Coordinate early on with state and federal authorities.</u> Economic impact data will drive recovery planning, so connecting early and often with senior government will support the addition of local issues and challenges into the program design process. Although some agencies will implement their own assessments, having rapid assessment protocols in place before the disaster occurs can allow local agencies to lead independent data collection, and help shape the recovery resources allocated to their communities.

- <u>Engage neighborhood groups and educational institutions.</u> Establishing single points of contact with businesses associations in commercial corridors of urban areas can be utilized for local assessments of business impacts. In fact, having a network of commercial corridor representatives who are tasked with calling into a central location after a disaster can facilitate the collection of intel while also allowing for dissemination of important information. These business owners or residents can count closed businesses, describe physical damage, and articulate early response and recovery needs. Similarly, involving local educational institutions like colleges and universities can provide access to a dedicated and low-cost army of researchers.[21] Economics, planning, business, and other departments have professors or graduate students who have research interests in topics related to disaster management. By allowing them to publish their findings in academic journals, local economic recovery professionals can deploy teams of data-collectors to implement surveys, focus groups, or other techniques to get valuable on-the-ground information.

- <u>Have databases and survey tools ready to go for the purpose of collecting and managing data.</u> Again, planning time that allocated to pre-disaster planning will cut down deployment time during the disaster recovery itself. To that end, securing or developing software, applications and questionnaires that can be quickly and easily tailored to the specific situation may be valuable.

Examples of post-disaster assessments are provided in the chart below.

Type of Assessment	Issue(s) Addressed	Typically Conducted By	Geographic Scope	Target Audience
Market study	Uncertainty of how the local market conditions may have changed	EDO, higher education, consultant	Local	Business community
Economic impact assessment/analysis	Uncertainty of the full scope and economic consequences. Concerns about projecting tax revenue losses. Lack of economic data about impacted areas.	Higher education, consultant, government	Local, regional, state	Local/state government
Industry impact assessment/analysis	Concern about acute impacts to a specific industry, which determines how and to what extent to assess	EDO, consultant, trade group/ association	Local, regional, state	Business community, EDOs
Workforce assessment/analysis	Did incident create skills gap/surplus? Retraining opportunities? Impact on unemployment.	Higher education, workforce agency, consultant	Local, regional, state	Local/state government, higher education
Resilience analysis	What actions can be taken to mitigate future impacts?	EDO, local/state government	Local, regional, state	Local/state/ federal government, private sector
Small business impact analysis	What impacts happened/will likely happen to small businesses? Changes to small business outlook?	EDO, SBDC, local/state government, higher education	Local	Local/state government, EDO
Economic development assessment	Has the incident changed perception of the investment risk? What impacts happened to economic development efforts/programs?	EDO, government, consultant	Local, regional	Local government, EDO

Type of Assessment	Issue(s) Addressed	Typically Conducted By	Geographic Scope	Target Audience
Cluster or entrepreneurship analysis	Has there been any impact on existing or nascent clusters? Are there any "clusters of opportunity" that could be prioritized for recovery? Is there an impact (positive of negative) on business churn or innovation?	EDO, higher education, local government, consultant	Regional, state	EDO, state government, higher education

Table 3: Reproduced from Carty and Wheeldon, 2014.

Establish communication protocols, including use of a call center and resource guide

Post-disaster communications are often difficult due to disruptions of telecommunication systems, the breakdown of word-of-mouth social networks, and the spread of rumors or misunderstandings that further confuse the public. Establishing communications platforms and protocols for use during disasters can allow effective dissemination of information, while also collecting important data. They may also be used to connect different economic actors in need of resources and partnerships.

Establishing a call-in line for business issues can provide a two-way interface for information transfer. Businesses can call in for updates and referrals, while providing data that might be useful to recovery professionals. Using a call center system like a 311-system to route calls to a special operator or tailored recording for economic recovery can be an effective way to piggy-back off of established systems. Also, collaborating with a chamber of commerce or similar organization to have a pre-disaster "business hotline" for general issues, could result in a well-known information hub that businesses might naturally turn to during a disaster. Assets like these should be fleshed out in the recovery plan.

Similarly, resource guides are an easy way to be of value to local businesses by aggregating information that is decentralized otherwise. Grant and loan programs, equipment programs, legal support, free accounting, and other support services should all be included. Compiling recovery information and posting it as a PDF file on economic development or economic recovery websites can increase information accuracy in the economy. If a jurisdiction has lists of local businesses providing recovery services, especially ones that have undergone some form or credentialing or verification process, these could be added to the guide. Also, it can be disseminated by hand at BRCs and other recovery centers. It is always a good idea to put tools and resources in the hands of visitors to staging sites since even if they do not use them, they may take them elsewhere for others to access. In the early days of the response, resource guides should be updated daily, if not more, so that information is the most accurate.

4. Advanced Recovery Preparation

In addition to the planning activities listed above, these further actions can be taken before a disaster to prepare for resuming critical business functions for businesses and workforce.

Conduct floodplain management and awareness forums

Local floodplain managers are well qualified and in a unique position to inform businesses of their risk, the status of current flood maps, and the benefits of flood insurance. Many businesses are still surprised to find that their general liability insurance does not cover flood loss. Recently in South Carolina, many business and homes not included in Special Flood Hazard Areas and not required to purchase flood insurance experienced flood damage. This is an all too frequent occurrence. With the high threat of flooding in North Central Texas, the risk must be better communicated to enable smart business decisions. Similarly, following a flood, new "high water marks" are established and serve as the basis for new building restrictions. Understanding these requirements is important before a disaster occurs and essential to the post-event re-building or relocation decisions that businesses will confront.

Pre-register local businesses for emergency services

Some areas provide pre-registration of local businesses that have been vetted as "local disaster recovery" businesses, and provide directories of such businesses to the public on demand. These lists can be provided through the Chamber of Commerce or similar entity, and will verify that businesses have local licenses, are bonded, or have other relevant qualifications. These businesses can apply for a special designation and/or go through a training course on delivering post-disaster goods and services.

Pre-register local labor for emergency work

Some municipalities maintain lists of individuals who have gone through welfare or employment support services and are available for rapid employment opportunities. These individuals are pre-registered with various government agencies like the parks department, or are assembled on an as-needed basis for debris removal and other activities. This can reduce the response time of local government in dealing with pressing emergency management issues, while also

Case Study: Jefferson Parish's Re-entry Program

Jefferson Parish, Louisiana, serves as a major economic engine for the entire region. The parish suffered substantial damage to its commercial and industrial areas after Hurricanes Katrina, and evacuees were prevented from returning to their homes due to a lack of basic services. The government developed an "on-the-fly" re-entry plan that that allowed business representatives to re-enter the area to re-establish business service.

Based on lessons learned, the JumpStart Jefferson Re-Entry Application Process was established. The online system registers local businesses and allows them to apply for re-entry status prior to any type of evacuation. Businesses are assigned to a tier that's correlated to their importance in preparing for the public's return and receive an authorization placard for their vehicle.

Source: The Recovery and Resiliency Roadmap: A Toolkit for Economic Preparedness getting immediate financial support to at-risk populations.

Pre-register for post-disaster re-entry with business licenses

A simple way of preparing for businesses returning to their locations after a disaster is to pre-register them for re-entry. Police, National Guard, or another enforcement agency can then match identification to pre-registration lists for priority entry when affected areas are secured. The registration process can be incorporated into annual business licensing, making it a one-stop activity. One jurisdiction that has implemented pre-registration is Taylor County, Florida, which has established three tiers of business re-entry, privileging critical infrastructure and major employers in the higher tiers. They also provide identification for essential employees of businesses so they can gain access to their worksites.

Coordinate with services to provide post-disaster "match-making services"

Whether it is linking businesses that need to share space, supply chain businesses that need new partners, equipment providers with equipment buyers, or employees and employers with each other, matching services could help economic actors get better access to services and information. Following Hurricane Katrina, locals took over sections of the Craigslist website for disaster related communications, and eventually site administrators set up separate pages for Katrina-related resources. Partnering with these types of sites to set-up disaster-specific portals could be a low-cost, high-impact add-on for recovery. When coupled with the business directory listed above, this could be a powerful tool for driving resources to affected businesses, entrepreneurs, and workers.

Mobile Workforce Unit

The Workforce Solutions for North Central Texas Mobile Workforce Unit (MWU) houses 13 computer stations and presentation system. It has been used to aid employers in recruitment and job fair efforts as well as supporting unemployed members of the public with job searching, resume development, and training.

MWU has been used during disaster recovery operations throughout the region, providing on-site services to employers and workers during the Bastrop Wildfire (2011), West Fertilizer Plant explosion (2013), Ennis tornado (2013), and Granbury tornado (2013). During these disasters, it has provided displaced workers with a location to identify and apply for jobs and unemployment benefits.

Source: North Central Texas Comprehensive Economic Development Strategy 2016

5. Economic Development Activities for Resilience

In sports it is often said that a good offense is a good defense. The same holds true for economic resilience. Increasing the diversity of the economy spreads risks across many different industries and businesses, and better ensures that the interdependencies between supply chains, firms, and markets are not concentrated too narrowly in a few fields. Similarly, the diversification of income opportunities creates a diversity of economic classes which can reduce the vulnerabilities associated with extreme income inequality. This is called a *portfolio* *diversification effect*—having a diverse portfolio of economic activity and income levels allows healthy and unaffected sectors to balance the impacts of those sectors affected by disasters.[1] A rural economy with farming, ranching, oil, and other opportunities can absorb workers potentially displaced by a downturn in a particular sector, while a rural mono-economy reliant on only one industry or export is susceptible to economic collapse if there is a serious disruption to the sector.

Proactive economic development is therefore a strong step toward economic resilience; however, resilient economic development is not just an exercise in quantity. In most situations, new jobs are followed by new people, so the traditional approach of attracting new firms can inadvertently shift resources to new entrants rather than increasing the adaptive capacity of local workers. The mantra of resilience is not merely more jobs, but *more of the right jobs*. Diversifying the local economy acknowledges that sometimes there is a mismatch between local talent and local opportunities, so finding ways to either 1) target development strategies to a range of firms which can utilize the local labor pool or 2) target capacity building initiatives to gaps in workforce skills for various industries to strengthen the alignment between businesses and labor.

Economic diversification is easy to talk about but harder to do, and there is no easy prescription for increasing the diversity of industries and firms in any locale. However, using lessons learned from the recovery planning process can identify weaknesses or threats in the economy, which can be channeled into economic development planning. Some practical steps that economic leaders can take towards the development of a healthy and diverse economy include:

Incorporate resilience into economic development planning

For economies to be resilient, resilience needs to play a prominent role in economic development activities and planning. This means including emergency managers in the economic development planning process, and tailoring economic development objectives to meet economic resilience goals. Economic recovery and economic development are two sides of the same coin, and should be pursued in a coordinated fashion.

Develop a Business Retention and Expansion (BRE) Program

BRE programs and other programs that promote "economic gardening" start with the idea that a healthy economy is one that grows from within. Creating an environment for economic growth that cultivates local resources, ideas, and talent is the foundation for all other economic development. As the core of the economy strengthens, it then becomes more attractive to entrepreneurs who wish to expand into other areas, and to external firms who are looking to relocate. BRE initiatives may include:

- Relaxing bylaws to be more business friendly;
- Connecting local businesses with state and federal incentives;
- Hosting roundtables for bankers and investors;

- Promoting community college or SBDC training initiatives for both entrepreneurs and labor;
- Incentivizing accelerators or incubators to scale local businesses;
- Expediting access to facilities and land for economic development;
- Supporting development of clusters and economic cooperation in the private sector.

It is important to note that BRE programs can easily be repurposed for disaster recovery if the need presents itself. The same activities that support day-to-day economic revitalization will become central to the revitalization of the economy in the wake of an economic shock. Besides having ongoing positive benefits, BRE programs are good practice for times of crisis.

Invest into or incentivize programs for a more adaptable workforce.

A critical issue for workers is having the right skills for the right opportunities. As disasters strike, demands for labor shift and some employees are left without the ability to work while businesses are left without appropriate labor. Promoting local technical schools and community colleges while encouraging workers to pick up additional skills and certifications will make workers better able to pursue post-disaster opportunities as they arise. This is particularly true in the case of disaster-related occupations (e.g., construction, debris removal, etc.) when local economies usually suffer a shortage of workers in both trades and unskilled labor. Regardless of whether a hazard occurs, a more skilled workforce will generally have positive economic effects across the board.

Engage workforce organizations and low-income communities into economic development

Local jurisdictions face obvious challenges in economic development. They need to recruit firms that will add to the tax base and that are politically invigorating to the electorate; however, while “new economy” companies might support the growth of the creative class in cities, they do not always provide jobs for working class or unskilled workers. In addition to the investments into the local workforce discussed in the previous section, collaborating with the workforce to understand how firm selection and recruitment can fit with local skills sets is an important step in “finding the right fit” for labor. Similarly, listening to the needs of the workforce for up-skilling or cross-skilling can suggest new technical assistance and training areas that will better enable them to secure available opportunities.

Promote local businesses through “Buy Local” campaigns

Buying local is critical. Local dollars have multiplier effects that continually benefit business, employees, and tax bases. A local business generally pays local employees who then shop at other local businesses. Also, local businesses are usually more accountable to residents. They are known locally, they have a reputation to uphold, and have more incentive to do a good job and charge appropriate fees. To this extent, “Buy Local” programs should be at the heart of every economic recovery. Cities, regions, chambers of commerce, and other stakeholders should publicly encourage residents to buy from local vendors or contractors, and support local entrepreneurs. This should not simply be a post-disaster message, however; rather, it should be a consistent program and narrative year-round so that a culture of buying locally is embedded in consumer preferences. The organic food movement has co-opted this approach by associating high-quality food with local producers, and has been so successful that higher-end consumers are now looking more for local, artisanal products regardless of their production methods.[33] A prominent "Buy Local" campaign can enrich the local economy on an on-going basis while being repurposed for disaster recovery when it is needed.

Focus on exports and reducing capital leakage

Keeping money in the community is important both before and after a disaster. To that end, concentrating economic development efforts on creating more export industries and firms, while developing local substitutes for imports, can increase the amount of capital that flows in and stays in the community. More resources and capital in the community will both soften the impact of economic shocks, while greater exports will increase the likelihood that local businesses will maintain their markets when a disaster occurs.

Harmonize regional economic development

The simple fact is that although tax bases end at the jurisdictional border, economies spread throughout regions. As much as cities compete with each other to attract firms or opportunities, they should also be sensitive to the reliance that firms and labor pools in the region have on each other. Good economic development around the region is mutually beneficial as supply chains and markets grow for different firms. Moreover, when disasters strike, strong economic regions provide ample opportunities for affected workers to find alternate employment, and businesses to find alternate suppliers or markets. Coordinating economic development strategies as well as economic resilience planning can diffuse risks and opportunities regionally, and help the economy rebound.

Encourage the growth of local enterprises with disaster-relevant expertise, goods, or services

Having a locally proficient private sector can be an advantage in disaster response and recovery since they better understand the area, and their benefits flow to local coffers. To this extent, encouraging the development of local expertise related to relevant disasters may increase the ability of those businesses to secure disaster contracts and hire local labor during the emergency. This is not always simple to achieve, but encouraging high-capacity businesses to seek disaster contracts in other areas could increase their relative capacities.

Make the case for infrastructure investments to other agencies/governments

Utilities are becoming increasingly important in economic development and the site selection of larger firms. Having good access to power, water, and telecommunications with reliable redundancies is a critical economic factor regardless of the presence of hazards. Upgrading infrastructure and investing into resilient utility systems will not only decrease the types of interruptions that can cripple an economy after a disaster but will also provide short-term economic benefits as more firms enjoy better access and reliability. Lobbying utility companies and state and federal authorities to make necessary investments should be an ongoing process for ensuring economic resilience.

Promote business continuity plans, pre-disaster household plans, and financial programs

Organizations and agencies should promote business continuity plans as well as household resilience planning to the local businesses and workforce. It is important for businesses and employees to be prepared to operate in the event of a disaster. Moreover, promoting financial programs such as savings, Individual Development Accounts, or other preparedness opportunities can help build a financial nest-egg for working families. This can be done in conjunction with banking and non-profit financial leaders. Also, helping industry organizations and chambers of commerce to access information about local workforce resources can benefit them in their own planning and information dissemination. This can be achieved by funding or catalyzing a business resource guide.

Promote good financial practices

It is important for businesses to keep good records, maintain honest accounting, carry appropriate insurance, and save money for the proverbial rainy day. Local economic stakeholders can support these habits by promoting good financial practices in their usual economic development activities. Information campaigns by Chambers of Commerce, Small Business Development Centers, and local tax offices that link financial practices with economic resilience can have positive effects on both disaster recovery and everyday economic growth.

Promote adequate insurance and insurance oversight

The West Fertilizer Company explosion revealed serious gaps in insurance coverage of local businesses as well as regulations concerning minimum coverage amounts. Although the explosion caused $230 million in damage, the fertilizer plant itself only carried $1 million in liability, and the school district did not have enough insurance to cover the cost of rebuilding the school, which is the area's largest employer.[41] Local governments and businesses should all carry enough insurance to ensure long-term business continuity. Moreover, if under-insurance is considered a significant threat, local governments should lobby senior government partners to determine how the regulatory environment can enhance protections in the case of catastrophic events.

Preliminary damage assessment at West High School (FEMA)

POST-DISASTER ACTIVITIES FOR LOCAL GOVERNMENT

When a disaster strikes, the end result of resilience is not perfection. No plan will be flawless, and not all bases will be covered. However, with good planning and preparation, the economy will be more adaptable to hazards, and local governments will have more tools available to support businesses and workers in their own recoveries.

Following a disaster mayors or senior elected officials will likely establish a recovery committee/task force to advise on recovery issues. A recent example can be seen in Flint, Michigan, with the establishment of the Fast Action and Sustainability Team. The size, composition, and role of the committee will vary depending on location and type of disaster, but generally emergency managers will be directly involved. While we cannot presuppose what the final governance structure or even what architecture will be in place post-disaster, the following activities are those that should be implemented during recovery operations. Emergency managers will play a key role in coordinating with stakeholder and partner groups to identify the appropriate lead organization and track completion.

1. Short-Term

Mobilize the task force and implement the plan

Recovery begins on day one. Although many activities will not take place until after the initial response has completed, it is critical to start gathering information, getting human resources into place, and preparing for the implementation of plan objectives. Along with coordinating with elected officials to identify local recovery structures, emergency managers should coordinate with state and federal regional offices to understand how these players will “present" at the local level through the state and federal coordination mechanisms. As part of these efforts, emergency managers should also learn what outreach to the private sector is planned and what coordination mechanisms are in place.

Connect with state and federal economic officials (RSFs, etc.)

Under the NDRF, recovery has gained new prominence in overall emergency management. When Recovery Support Functions (RSF) are activated, they often shadow the relevant Emergency Support Functions (ESF) throughout the response phase so they are aware of the progress of the response, and how their work will build on response activities. Relevant Economic RSF staff will usually begin connecting with local stakeholders to understand economic impacts, and understand how they will manage federal resources for the recovery. Local recovery representatives should have a presence early on, and begin working with both federal and state authorities to articulate needs, determine what resources are available, and advocate for gaps that need to be filled. Personal relationships are important, so getting in front of the right people and maintaining contact through the recovery will better coordinate activities.

Encourage utility providers to target commercial corridors or industrial districts

Lifeline loss can compromise businesses in only a few hours. While large employers can either restore their own systems back on line or benefit from rapid reconnection early on, smaller businesses can often have a lower priority in the order of service resumption. Working with utilities to target areas where small businesses are concentrated can help get other services like food provision or equipment sales going when and where they are critically needed.

Perform rapid assessments/deploy assessment teams

As soon as it is safe to do so, assessment teams should be deployed to determine the extent of damage to local businesses, and start compiling a picture of the economic impact. At first this may simply mean making visual confirmation of whether or not sensitive economic assets have been compromised. In later days, the full range of assessment teams and toolss may be deployed.

Implement procurement plan

When possible, local procurement provisions should be implemented to support local businesses. Debris removal, private emergency services, and other related support should be sourced locally if capacity is available. A focus on local businesses should continue throughout the response and recovery.

2. Mid-Term

Secure verifiable information from reliable sources

Whether it involves embedding an economic agency professional in the Emergency Operations Center (EOC) so that there is access to consistent, real-time information about response and recovery efforts, or having routine update calls with government and EOC representatives, obtaining accurate and concise information will be highly valuable to businesses and organizations alike. Verifiable information is a precious commodity after a disaster, and many businesses and employees will be looking to economic leaders to provide it.

Enable communication protocols

As soon as information about the state of the economy and the recovery becomes available, it should be disseminated through the appropriate channels. This means implementing plans for call

Case Study: The Data Center

The mission of The Data Center, a nonprofit organization serving New Orleans and Southeast Louisiana is "to build prosperous, inclusive, and sustainable communities by making informed decisions possible." Following Hurricane Katrina, they partnered with the Brookings Institute to create *The New Orleans Index*, a regularly updated report of recovery indicators. The most recent version (*The New Orleans Index at Ten)* was completed in July 2015, and examines trends for the eight parishes in the New Orleans statistical area. A key section of the report looks at economic growth, including job growth, economic drivers, productivity, entrepreneurship, and venture capital, among others.

Source: The Data Center (www.datacenterresearch.org) centers and resource guides, as well as making effective use of websites, social media, and traditional media outlets to communicate to the public about the economic recovery.

This will remain a priority throughout the recovery. In the months and years after a disaster, there are hundreds of funding processes that various entities will submit applications for support. This might include non-profits looking for operating grants or businesses themselves looking for recovery investments. In all of these cases, access to data will allow local entities to describe disaster impacts, and better make their case for resources. Having centralized, open-access data provision through websites or other means will support applications for assistance across the economy. The same tools used for rapid communication in early recovery stages will evolve in function throughout later stages.

Establish a BRC

Opening a Business Recovery Center is a bit of an art. Opening it too late may frustrate the public because they want action to be taken. On the other hand, opening it too early without enough resources in place may suggest that the BRC is a "waste of time" and turn off early visitors. Ultimately, the BRC should be opened when staff and partners can begin delivering value to local businesses. In the early days this may simply mean handing out resource guides and making referrals to other service providers. But the consistent message should be that the BRC is always growing, there will always be new and additional services available, and that businesses should continue to come back and check in. This will not only increase retention of potential clients of the BRC, but will also provide opportunities for gathering new intel on the recovery when businesses discuss their issues.

As noted above, a steady BRC site should be secured from the available list of primary and backup locations. Once the BRC is established, it should generally remain where it is located. Depending on the community, a great deal of information is communicated by word-of-mouth, and many businesses will visit the center without calling or visiting a website. In order to get these constituents into the system, site continuity is beneficial.

Invite partners to co-locate for providing economic recovery services

Ideally relationships with recovery partners will already be in place before a disaster so that they will deploy staff to BRCs as soon as it opens. But there will be always be a need to draw in service partners who were not previously integrated into recovery planning. Recovery staff should continually examine the recovery environment and encourage new partners to co-locate, especially when they represent traditionally disadvantaged populations or have unique resources to provide.

3. Long-Term

Use communication tools to increase community participation in recovery planning

Using communication tools to solicit the needs and preferences of local businesses during a recovery can increase goodwill by giving them the chance to be heard. Businesses can also help steer planners clear of potential mistakes. For example, surveys of business owners following the 2010 Canterbury earthquake in New Zealand described how community recovery projects like road maintenance and sidewalk replacement put more pressure on businesses because they blocked the ability of customers to visit their shops. Similar to construction in Lower Manhattan after the September 11 terrorist attacks, the recovery itself became a severe economic disruption for businesses.[7,35] In other cases, siting aid distribution centers near retail outlets can siphon off paying customers from businesses trying to break even. Obtaining feedback from local businesses on proposed recovery actions may facilitate a more impactful recovery and get the required buy-in for success.

Advocate for local economic needs

With all the learning that comes from assessments and community engagement is a responsibility to take action. Local jurisdictions and economic development agencies are uniquely placed to advocate for the interests of the local business community, especially in the design processes related to recovery. Many programs are designed with fraud prevention in mind, but can arbitrarily deny good applicants because of prohibitive requirements. Emergency managers and planners can push senior government to tailor programs to local needs, and shape qualifications to enhance access. The political dimension of disasters cannot be underestimated; there have been clear examples over the past decade of slow-to-respond entities being galvanized into action due to a well-articulated plea for help, or an especially dramatic media interview. Simple actions that advocate for the community can have profound results.

Promote the local economy externally

As cliché as it may sound, "We Are Open for Business" should be on the lips of every government official and economic booster that represents an affected area. Despite even massive destruction, there are always businesses who survive unscathed or are only partially affected, and they need the world to know that there are still economic opportunities in the disaster zone. Situations with significant brand damage can happen even when there is no physical destruction.

Hospital closures in Toronto (BBC)

The 2014 Ebola scare in Dallas resulted in a short-term drop in restaurant and bar patrons and a seven percent drop in hotel occupancy as business travelers postponed or canceled travel.[42] A similar (but more significant) loss was experienced in Toronto during the Severe Acute Respiratory Syndrome (SARS) outbreak of 2003, costing the city over half a billion dollars in lost travel and retail revenue.[31] In response, a public-private partnership spent over $11 million on advertising and events to begin attracting tourists back to the city again, and was credited with dampening the economic impact of the outbreak.[32] Brand management is a key concern after a disaster, and is important for educating consumers.

A related issue is capturing the goodwill that the national and even global public may have for an affected area. Many people see a disaster on the news and their immediate response is to do something, which usually results in food and clothing drives, or making donations to the Red Cross. These are all important and necessary actions, however, they can also result in an over-abundance of certain types of aid over others. One important message to communicate during a disaster recovery is, "if you want to help us, buy from us." Encouraging other communities to buy from surviving businesses can inject fresh capital into local economies and expand customer bases for businesses that are suffering. Balancing the charitable response with an economic response can help improve the whole community's position.

Roll out or repurpose "Buy-Local" campaign

Promoting local businesses within the community will keep recovery dollars cycling through the local economy. Implementing or repurposing a "buy local" campaign as reconstruction begins can keep the community focused on mutual assistance, and maintain local incomes.

Roll out business planning and technical assistance

Technical assistance (TA) services are the link between small businesses and recovery resources. Although a fair number of business owners are savvy enough to navigate post-disaster bureaucracies, many entrepreneurs either lack the capacity to do so on their own or are too distraught from the disaster to go it alone. Various forms of TA are therefore necessary to ensure high rates of resource access and impact. These include:

- Application Technical assistance. Some business owners may not be comfortable filling out complex forms, while others suffer from literacy issues or learning disabilities that prevent them from completing applications. Many owners have questions about the process or need advice on what agencies and institutions are looking for in the application. Still others have severe issues with paperwork and need help piecing together a picture of their businesses. Engaging SBDCs and SCORE volunteers to help with the applications for funding or other resources is a vital part of case management and support following a disaster. To this extent, it is important to consider pre-disaster capacities of TA organizations, and determine whether or not local capacity should be improved or augmented.

- Individual business recovery planning. Some businesses are unsure how they should rebuild, what their options are, and how to do the kind of business planning that is necessary. Relying on SBDCs and SCORE volunteers to counsel business owners through their transition can help improve business retention rates.

- Personal trauma counseling. Business owners are usually doubly impacted by disasters, because many of them experience both personal and enterprise losses.[36] The various burdens of making home repairs and resurrecting the business stretches already thin resources and generally increases the psychological trauma of the disaster itself. Having trauma counselors on site at the BRC is becoming a best practice of economic recovery so that when it is needed, business owners can get the appropriate referrals to maintain their mental health.

- Business closure assistance. Although it would be ideal to have 100 percent of businesses return after a disaster, that is never the case. There are always some businesses that may have been underperforming before the hazard occurred, or may not have the same competitive advantage in a changing economy afterward. Unfortunately, not all business owners recognize this, or if they do, they don't know how to successfully close down operations. These often become *dead businesses walking*—enterprises that have no hope of successful recovery, but whose owners continue to pour money and resources into until they go bankrupt.[6]

  Those that take on post-disaster debt are especially vulnerable because the only way they can survive is through growth that may be impossible under new market conditions.[34] It is therefore vitally important that while recovery professional strive to rebuild the economy, they should also support those businesses that may want to liquidate inventories and exit the market. Technical assistance to this end can be taken on by SBDCs or other TA providers who understand the natural conclusion of the business cycle. Supporting businesses in this way preserves assets that can potentially be invested into future ventures or for the owner's own personal recovery, but it also opens up space in commercial districts for new businesses that want to open. The more assets that are protected, the better able these shifting entrepreneurs will be in stabilizing their families, and making a lasting transition. This is also important for the workforce in these businesses.

Damage to ALCO store (NOAA)

After the April 2007 tornado in Tulia, Texas, the city's Alco store was severely damaged and declared a loss. The business opted to close. For those old enough, this could link to retirement programs and similar support. For those young enough, this could link to retraining and educational programs that could help them pursue new careers. A business closure does not have to be a loss for the parties involved, but can be an opportunity for change and growth.

- Post-disaster innovation and entrepreneurship. Disasters bring both losses and opportunities, and during these crises some entrepreneurs find their market niche. Usually the emphasis on economic recovery is limited to businesses that were affected. However, jurisdictions and philanthropists have a duty to explore how investing in and incentivizing new private sector opportunities can create new jobs, more diverse economies, and generally increase economic resilience as well. Balancing our revival of harmed businesses with capturing opportunities for new businesses may have better long-term returns then trying to cling to an economic moment that has passed.

Roll-out post-disaster "match-making" portal

As detailed above, websites or other tools that can connect business in search of co-location opportunities, supply chain partnerships, labor opportunities, etc., can be beneficial for a recovery. Activating a pre-designed portal, or implementing a partner's site, can create the space for new connections in a compromised economy.

Collaborate with the local financial sector to design the right programs and products

The problem after disasters is not always the lack of capital for businesses, but the lack of the *right kind* of capital. The packaging of financial products and the processes for accessing them can inhibit access to capital at best, and set businesses up for failure at worst. Encouraging thoughtful program design is essential for financial recovery. This can include the following:

- *Mobile and field-based services.* Especially in areas with significant physical damage, banks should geographically disperse services to increase access. Mobile ATMs and tellers, partnering with community organizations for loan intake, and similar practices can increase financial access for businesses.
- *Provide bridge loans and lines of credit.* Businesses may have insurance coverage or various accounts receivable, but payment may be delayed for weeks or months at a time. Developing products that can fill financial gaps may be useful for businesses that have the future resources for repayment.

- *Revise repayment terms.* One of the more prohibitive aspects of debt (either current debt or debt incurred after a disaster) is that repayment terms which have high interest rates or aggressive repayment schedules may force otherwise good businesses into insolvency. Finding creative ways to extend repayment such as using interest-only periods, lengthening repayment terms, allowing no-cost refinancing, etc., may protect a financial institution's long term investments, while providing short-term relief to struggling businesses.
- *Simplify application procedures*. Affected businesses may lack the technical expertise necessary for many application processes. Also, many businesses may not be able to wait weeks or months to learn if they are eligible for financing; they need to implement their own recovery planning quickly. Financial institutions should identify the ways they can streamline application processes and support businesses in their inquiries. This also includes being able to give the "quick no." If it is obvious that a business will not qualify, informing its owners of this decision quicker will enable them to move on and hopefully find alternative financing arrangements.
- *Provide alternatives to loans.* As previously discussed, indebtedness can cripple businesses rather than support them, and can lead to loss of significant personal assets as well under particular loan agreements. Developing financial programs that rely on grant funds or financial technical assistance can be valuable for small businesses that can't qualify for debt, or can't absorb the personal risk. Also, programs like these which are targeted to low-income communities can meet banks' Community Reinvestment Act (CRA) requirements, thus benefitting them as well as the community.

Allow relocation or encourage relocation funding

Local economic recovery is tricky in the sense that the emphasis is usually on place-based economic programming. Local leaders want to see their commercial corridors return to "normal" which means they usually want to retain businesses in place. The reality, however, is that the "new normal" is not always the best place for every business. Interviews with business owners after the September 11 attacks showed that since financial programs were often tied to businesses staying in the neighborhood, they were bound to areas that had little commercial traffic, which eventually forced them into more debt or failure.[34] Allowing businesses to relocate when they receive disaster funding, or providing targeted relocation assistance funds, may improve overall economic performance even though it may reduce the short-term resilience of specific locations. Also, it will open up spaces for businesses that genuinely want to be in a particular neighborhood and may have a better chance of succeeding there.

Invest in growth, not just recovery

As noted in the NDRF, the core recovery is the ability to return economic and business activities to a state of health and develop new economic opportunities that result in a sustainable and economically viable community." Just as they create economic problems, disasters also provide new opportunities for entrepreneurs and business expansion. The post-disaster environment provides communities with an opportunity to assess their economic development strategies and target industries. A prime example was discussed earlier when Greensburg, KS, redefined itself as one of the greenest cities in the country. Local governments can prioritize and invest in new ventures undertaken to solve new problems. These businesses can be the engines for economic growth in vacuums that exist when other businesses fail. Public-private impact accelerators (like "Propeller" in New Orleans – www.gopropeller.org) can be established to guide new ventures through the process of attracting resources, and getting ready for venture funding.

Trinity River Flooding in Dallas (CNN, May 29, 2015)

Appendices

Appendix A: Emergency Management Checklists

A community's economic health directly impacts its ability to recover from a disaster. Waiting until after a disaster strikes to begin to discuss economic recovery issues puts a community at a disadvantage. Each community is unique and each disaster brings its own issues. The structures and processes established to address pre- and post-disaster economic recovery will therefore vary from community to community. Emergency managers can play a key role in supporting economic recovery and resilience activities by serving as the linchpin and coordinating with other public and private organizations to ensure that these important issues are addressed. This appendix summarizes the pre- and post-disaster local government activities explained in Section III of this document.

Pre-Disaster Checklist for Local Government
Economic Analysis
Conduct hazard assessments.
Conduct economic asset mapping.
Conduct physical economic mapping.
Conduct economic SWOT analysis.
Coordination Actions
Establish an economic resilience task force.
Increase partnerships between utilities/transportation agencies and the economic development community.
Increase bank partnerships with CDFIs and non-profit financial institutions. Discuss economic recovery planning with them.
Increase partnerships with workforce and labor organizations for employee/employer matching.
Explores partnerships with local non-profits for economic recovery.
Incentivize or invest in capacity building programs for local organizations.
Economic Recovery Planning
Identify department roles and organizational charts for economic recovery
Coordinate planning efforts with related plans and planning agencies (for example, regional emergency management plans) and the NDRF.
Propose BRC locations and back-ups.
Identify locations for "commercial triage" where small businesses can relocate.
Identify alternate transportation routes for businesses and workforce.
Establish guidelines for relaxation of regulations concerning home-based businesses and commercial/industrial zoning.
Establish guidelines for reduced building inspections and code enforcement to get safe spaces approved.
Plan for local procurement set-asides.
Plan for post-disaster rapid economic assessments.

Pre-Disaster Checklist for Local Government
Establish communication protocols, including use of a call center and resource guide.
Advanced Recovery Preparation
Conduct floodplain management and awareness forums.
Pre-register local businesses for emergency services.
Pre-register local labor for emergency work.
Pre-register for post-disaster re-entry with business licenses.
Coordinate with services to provide post-disaster "match-making" services.
Economic Development Activities for Resilience
Incorporate resilience into economic development planning.
Develop a Business Retention and Expansion (BRE) Program.
Invest into or incentivize programs for a more adaptable workforce.
Engage workforce organizations and low-income communities into economic development.
Promote local businesses through buy-local campaigns.
Focus on exports and reducing capital leakage.
Harmonize regional economic development.
Encourage the growth of local enterprises with disaster-relevant expertise, goods, or services.
Make the case for infrastructure investments to other agencies/governments.
Promote pre-disaster household planning and financial programs.
Promote good financial practices.
Promote adequate insurance and insurance oversight.

Post-Disaster Checklist for Local Government
Short-Term
Mobilize the task force and implement the plan.
Connect with state and federal economic officials (RSFs, etc.).
Encourage utility providers to target commercial corridors or industrial districts.
Perform rapid assessments. Deploy assessment teams.
Implement procurement plan.
Mid-Term
Secure verifiable information from reliable sources.
Enable communication protocols.
Establish a Business Recovery Center (BRC).
Invite partners to co-locate to provide economic recovery services.
Long-Term
Use communication tools to increase community participation in recovery planning.
Advocate for local economic needs.

Post-Disaster Checklist for Local Government
Promote the local economy externally.
Roll-out or repurpose “buy local” campaign.
Roll-out business planning and technical assistance programs.
Roll-out post-disaster “match-making” portal.
Collaborate with the local financial sector to design the necessary programs and products.
Allow relocation or encourage relocation funding, as necessary.
Invest in growth, not just recovery.

Appendix B: Business Checklists

All organizations face the possibility of disruptions due to hazards ranging from flooding to civil unrest. There are a number of steps that businesses can take to not only improve their own resilience and ability to recover but the community's as a whole. Beyond providing jobs and services to the public, the owners and operators of critical infrastructure businesses can also play a key role in recovery efforts.

The pre- and post-disaster checklists included in this appendix, summarize the activities outlined in section II of this document. Depending on the size and scope of the business, it may not be feasible for every business to complete each of these activities by itself. It may be beneficial for business owners to collaborate or work with local chambers of commerce or economic development organizations to address these areas.

Pre-Disaster Checklist for Business	
Planning	
	Develop an evacuation or shelter-in-place plan.
	Have a plan in place to move or protect critical equipment and inventory that are likely to be compromised.
	Develop a business continuity plan.
Structures and Equipment	
	Have appropriate insurance and levels of coverage for the full range of losses associated with likely disasters.
	Encourage building owners to consider structural retrofits and disaster preparedness.
	Structure leases with opt-out or rent abatement clauses in times of disaster when use or access to buildings is limited.
	Identify alternate spaces or potential colocation partners before a disaster strikes so there are fallback opportunities for siting business activity.
	If there is a concern for site security, establish an arrangement with a security company to deploy to your business if a disaster strikes.
	If possible, pre-register for site entry.
Utilities and Information Technology	
	Properly maintain all utility connections to buildings.
	Keep an inventory of equipment to turn off or inspect during an outage.
	Identify back-up utility sources.
	Carry business interruption insurance with appropriate coverages for utility loss.
	Protect electronic data through appropriate backups and redundant access.
Transportation and Supply Chain	
	Plan for back-up modes and routes of transportation.
	Pre-verify transportation contracts in case of disaster.
	Diversify number and location of suppliers.

Pre-Disaster Checklist for Business
Request to see business continuity plans for suppliers.
Prepare for surge or softening of demand.
Employees/Workforce
Encourage employees to create their own continuity plans.
Cross-train and/or externally source labor.
Establish good communication protocols for employees.
Customers, Markets, and Procurement
When possible, diversify consumers geographically.
Prepare for government contracting.
Finance and Financial Processes
Keep cash reserves.
Protect and back-up all important business documents.
Keep good accounting records of post disaster expenses.
Make sure to have the right kind of insurance.
Don't rush into debt.
Discuss disaster preparedness with financial institutions.
Protect and plan for payment systems.

Post-Disaster Checklist for Business
Short-Term
Maintain personal safety.
Implement the business continuity plan.
Deploy building security.
Contact utilities /set-up back up power.
Gather paperwork.
Mid-Term
Access site and determine physical damage.
Check gas, water, and sewer connections for breaks or leaks.
Communicate with employees.
Contact suppliers and transportation partners.
Contact insurance carriers and bank.
Communicate with customers.
Long-Term
Visit the Business Recovery Center.
Seek technical assistance.
Collaborate with other businesses.
Provide services for employees.
Where possible, use flexible work hours and locations.

Post-Disaster Checklist for Business
Seize opportunities after a disaster.
Participate in the post-disaster community planning processes.
Consider all your options.

APPENDIX C: BUSINESS IMPACT ASSESSMENT PLANNING TOOL AND USERS GUIDE

Overview

Economic resilience depends on the adaptability of businesses during a crisis. Adaptability is achieved through ongoing planning that identifies vulnerabilities in critical functions, and establishes redundancies or work-arounds if a disaster occurs. The Business Impact Assessment and Planning Tool (BIA-PT) helps businesses of any size to examine their business processes, isolate ones that are critical to core operations, and prioritize ones that should receive further treatment. This tool can be used in conjunction with the NCTCOG Economic Resilience Toolkit which provides recommendations for maintaining critical business functions and planning for business interruption.

The BIA-PT can be used by the business owner individually, or in conjunction with a technical assistance provider who can assist in resilience planning and other services. Though not necessary, using the digital version is preferred since it has functionality that will not appear in a printed version.

Business Impact Assessment and Planning Tool NCTCOG North Central Texas Council of Governments

The Business Impact Assessment and Planning Tool can be used to identify critical business functions, and plan for their resilience. The assessment tool can be used for any particular threat (e.g., tornado, flood, terrorism, etc.) or for "All Hazards". Use drop-down menus in the digital version to mark the priority, vulnerability, and recovery timeline needed for each business function.

Business Name	Date of Assessment	Type of Threat

Business Function	Priority	Vulnerability	Recovery Need	Mitigation Plan
Example: Payroll	*Essential*	*Vulnerable*	*Medium-Term*	*Move to a 3rd party payroll system.*
Physical Capital/Facilities				
Access/stability of primary business site				
Access/stability of other sites (e.g. warehouse)				
Availability/capacity of building owner(s)				
Security of sites (e.g. alarms/guards/etc.)				
Working condition of equipment				
Operations				
Availability of inventory				
Availability of suppliers/vendors				
Availability of partner businesses/organizations				
Internal shipping and receiving capacity				
Marketing systems (website, etc.)				
Utilities				
Electricity				
Water				
Gas				
Sewage				
Telephone				

NCTCOG Business Impact Assessment and Planning Tool

In addition to using this tool with the NCTCOG Economic Resilience Toolkit, its members can also benefit from combining it with other technical tools like the Institute for Business & Home Safety's "Open For Business – EZ" (OFB-EZ) program. Tools like OFB-EZ provide worksheets and other resources that can help business owners identify and prepare for business risks.

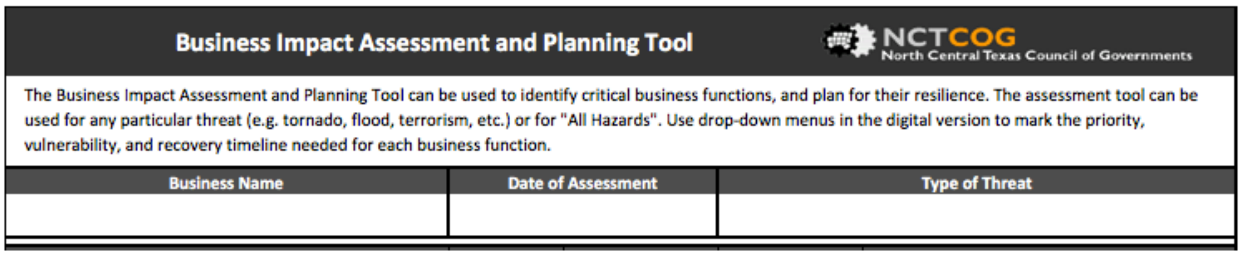
This primer provides an overview of critical business functions and describes how business owners can use the tool to enhance business resilience. A description of the fields in the tool worksheet follows.

User's Guide

Business Information

This section provides spaces for the individual completing the assessment to enter the name of the business being assessed and the date of assessment. The assessment should be performed periodically so that the business can track its progress and identify if basic assumptions about vulnerable processes have changed.

Under "Type of Threat," assessors should specify any particular threats that are of concern. For example, if a business is particularly vulnerable to flooding, the assessment can be done from the perspective of how floods may impact critical business functions. Alternately, an assessment can be done from an "All Hazards" perspective, which assumes that any particular function may be compromised.



Business Impact Assessment and Planning Tool NCTCOG North Central Texas Council of Governments

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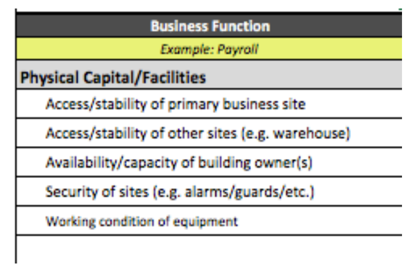
Business Name	Date of Assessment	Type of Threat

Business Function

All aspects of business facilities and operations located in this column will be assessed by importance, vulnerability, and recovery need. Every business is different. The tool comes prepopulated with a list of functions; however, rows can be added or deleted in order to adapt the tool to each business's needs.



Business Function
Example: Payroll
Physical Capital/Facilities
Access/stability of primary business site
Access/stability of other sites (e.g. warehouse)
Availability/capacity of building owner(s)
Security of sites (e.g. alarms/guards/etc.)
Working condition of equipment

Priority

The priority of each function should be rated on how critical it is to the functioning of the business. Using the dropdown boxes embedded in the spreadsheet, the following priorities can be assigned:

- *Critical* – The business absolutely cannot operate without this function.
- *Essential* – The business may be able to operate for a short time without this function, but it will need attention relatively soon.

- *Non-Essential* – The business can operate without this function, although it may be inconvenient to do so.

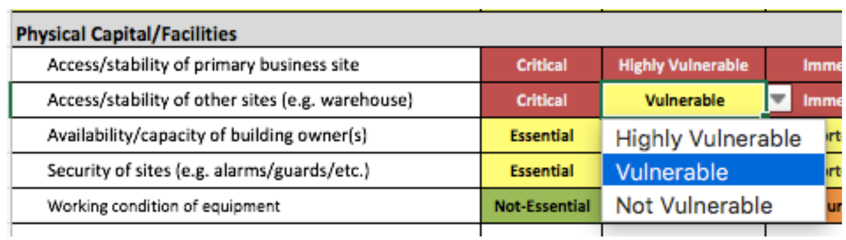
An example of this may be the use of a credit card payment terminal. For a book publisher the system may not be necessary for sales and thus be "non-essential," while for a retail furniture store it may be "critical" as credit cards are used for nearly every item purchased.

Vulnerability

The vulnerability of each function should be rated on how likely it may be for a hazard to disrupt the function in question. Utility access may not be curtailed during an episode of terrorism, although it may be highly vulnerable to thunderstorms or tornados.

Another way to use this field is to determine which functions are completely out of the control of the business itself. Brand damage to the local market may be a considerable vulnerability because the business owner can do little about it. Identifying vulnerabilities on the basis of control can either pinpoint areas that do not deserve planning resources or areas in which effective partnering and collaboration can increase control over future outcomes. The dropdown menus contain the following three classifications:

- *Highly Vulnerable* – There is a high risk of the function being compromised.
- *Vulnerable* – The function may be compromised by a hazard.
- *Not Vulnerable* – There is low risk that the function will be compromised



Recovery Need

For every business function there is a maximum amount of downtime that can be tolerated before the business suffers critical disruption. For a grocery store the maximum amount of time refrigerators can be off may be 6 to 12 hours or spoilage will occur. This is typically referred to as the "Maximum Allowable Outage" or the "Maximum Allowable Downtime" of a business function.

The "recovery need" refers to when the function needs to come back online or when an alternative must be found before interruption occurs. The timeframe will be different for every business, so individual timeframes should be defined for each assessment. The following definitions include suggested times only.

Physical Capital/Facilities			
Access/stability of primary business site	Critical	Highly Vulnerable	Immediate
Access/stability of other sites (e.g. warehouse)	Critical	Vulnerable	Medium-Term
Availability/capacity of building owner(s)	Essential	Not Vulnerable	Immediate
Security of sites (e.g. alarms/guards/etc.)	Essential	Vulnerable	Short-Term
Working condition of equipment	Not-Essential	Not Vulnerable	Medium-Term
			Long-Term

- *Immediate* – 0 to 12 hours. These functions are so critical they should already have back-ups ready to go when a hazard occurs.
- *Short-Term* – 12 to 72 hours. The initial actions listed in a business continuity plan should address these functions.
- *Medium-Term* – 72 hours to 7 days. Though important, these functions can be delayed until other issues are solved.
- *Long-Term* – Beyond 7 days. The functions are "nice to have" but not top priority.

Mitigation Plan

Mitigation Plan
Move to a 3rd party payroll system.

This field is provided for businesses to identify concrete steps for mitigating or preparing for the loss of a particular function. This will be unique to every business: loss of electricity may prompt one business to use its back-up generator, while for another business it might require co-location at a partner firm until the electricity returns. Although some issues may appear at first to be ones in which the business has no control over, there is an opportunity for critical thinking about alternatives like partnering, investing in new technologies, or lobbying appropriate authorities that can decrease the likelihood of downtime. The NCTCOG Economic Resilience Toolkit can also be used as a resource for considering possible mitigation and preparedness options. There is no minimum amount of detail to enter into this field, however the more detail that is provided will provide better direction in implementing mitigation and preparedness plans.

Reports

A number of reporting options have been added to the spreadsheet. In order for these to work, macros need to be enabled when the tool is opened. Upon opening the page, you will find four buttons under reporting option.

Business Impact Assessment and Planning Tool NCTCOG North Central Texas Council of Governments

Business Name	Date of Assessment	Type of Threat
-	-	-

Reporting Options

Populate/Reset | Sort by Priority | Sort by Vulnerability | Sort by Recovery Need

Business Function	Priority	Vulnerability	Recovery Need	Mitigation Plan
Example: Payroll	*Essential*	*Vulnerable*	*Medium-Term*	*Move to a 3rd party payroll system.*

- **Populate/Reset**. This button allows you to reset the data on the page to match the assessment tool. Prior to running a report, the page should be reset so that any updates that have been made on the first sheet are reflected in the reports page.
- **Sort by Priority**. Grouping critical functions by priority can assist planners to identify what issues require the most immediate attention. By selecting this report, all critical functions regardless of category will be sorted by priority. You will notice that all critical business functions subheadings will have dropped to the bottom of the list.

Business Function	Priority	Vulnerability	Recovery Need
Example: Payroll	*Essential*	*Vulnerable*	*Medium-Term*
Access/stability of primary business site	Critical	Vulnerable	Immediate
Availability of partner businesses/organizations	Critical	Vulnerable	Short-Term
Electricity	Critical	Not Vulnerable	Immediate
Gas	Critical	Vulnerable	Medium-Term
Operation of payment processing system	Critical	Vulnerable	Short-Term

- **Sorty by Vulnerability**. Similar to the priority sort, this groups functions by vulnerability, regardless of critical business function category.
- **Sort by Recovery Need**. This report will sort critical business functions based on recovery need (immediate, short-term, medium-term, or long-term), regardless of category.

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