U.S.
Resilience
Project

Securing Prosperity and Preparedness Resiliency in New Jersey

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NEW JERSEY INSTITUTE OF TECHNOLOGY

Workshop Briefing Book

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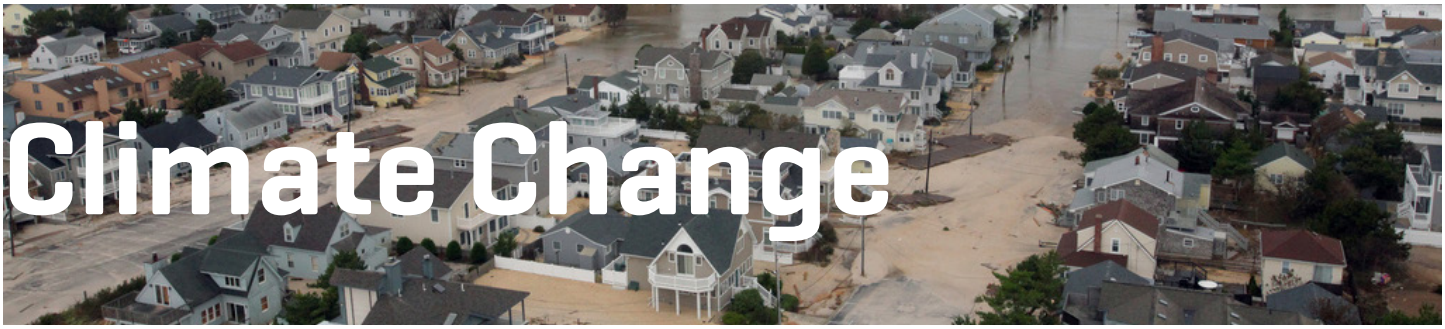
Section 1
The Cure for Anxiety Deficit Disorder

Why New Jersey Businesses Should Care About Resilience

These days, it is not hard to find things that keep us lying awake at night. Increasingly, we face the "un" categories of risk: ***un***predictable, ***un***anticipated and ***un***stoppable. Who would have predicted an Icelandic volcano that halted trans-Atlantic traffic or a Frankenstorm that decimated swaths of the Atlantic coast line. In fact, the only thing we know for sure about the future is that it will be volatile and uncertain. That is why citizens, companies, communities — even countries — need to cultivate resilience.

Resilience strategies create a capacity to manage consequences, irrespective of whether the triggers for disruption are climate- and weather-related, accidental or terrorist-related, technological or economic. In an unpredictable world, the ability to anticipate and adapt to shifts and shocks — both minimizing their impact and seizing the positive opportunities they may create — has become a strategic competency, essential to crisis management, competitiveness and sustainable growth.

Although disruptions may be inevitable, they do not have to become disasters. The resilience of small businesses, which generate about half of total economic growth and employment, is pivotal for New Jersey's prosperity. The following pages showcase the kinds of risks that New Jersey's businesses are likely to confront.



Climate Change

New Jersey is experiencing rising temperatures, more frequent heavy rain events, and a rise in relative sea level, which will make impacts of coastal storms more severe even if there are no changes in storm intensity.

Photo by Master Sgt. Mark Olsen, under Creative Commons license, Flickr, http://bit.ly/RU1xrn.

Indicators

- Nowhere in the world is the rising number of natural catastrophes more evident than in North America. Research by Munich Re shows that the number of weather-related loss events in North America nearly quintupled during the past three decades, higher than any other region in the world, with an overall loss burden of more than a trillion dollars.[1]
- Temperatures are rising. Nine of the ten warmest calendar years on record in New Jersey have occurred since 1990 and the five warmest years have occurred since 1998, consistent with the long-term upward trend of 2.2 °F per century.[2]
- There is a long term, though highly variable, trend of increasing annual precipitation for New Jersey. Heavy precipitation events have increased dramatically in the past two decades, occurring more than twice as often in recent years than during the past century.[3]
- Sea levels along the New Jersey shore have risen faster than the global average. At Atlantic City, where records extend back to 1912, sea level has risen by an average rate of 1.5 inches per decade over the period of record. The rate of sea level rise is greater along the New Jersey coastal plain because the land is subsiding at the same time that water levels are rising.[4]
- Average annual losses in New Jersey will likely increase from current levels by between 64 and 174% by 2050 due just to mean sea-level rise. By 2100, New Jersey will likely see a $1.4 to $3.7 billion increase in losses.[5]

1 Munich Re, Severe Weather in North America, October 2012, http://www.munichre.com/en/media-relations/publications/press-releases/2012/2012-10-17-press-release/index.html.

2 Rutgers Climate Institute, State of the Climate: New Jersey, 2013 http://climatechange.rutgers.edu/resources/state-of-the-climate-new-jersey-2013.

3 Rutgers Climate Institute, State of the Climate: New Jersey, 2013, http://climatechange.rutgers.edu/resources/state-of-the-climate-new-jersey-2013

4 Rutgers Climate Institute, State of the Climate: New Jersey, 2013, http://climatechange.rutgers.edu/resources/state-of-the-climate-new-jersey-2013

5 Rhodium Group, American Climate Prospectus: Economic Risks in the United States, June 2014, http://rhg.com/wp-content/uploads/2014/06/RHG_AmericanClimateProspectus_June2014_LowRes1.pdf

Indicators

- According to an article in Inc. Magazine, Symantec estimated that cyberattacks on small businesses rose 300 percent in 2012. They note that as large corporations continually improve their security, criminals have shifted their focus to more susceptible smaller organizations.[6]
- Almost one-third of U.S. small businesses surveyed by the Ponemon Institute had a cyber attack in the previous year. Nearly three-quarters of those businesses were not able to fully restore their company's computer data.[7]
- Visa Inc estimates that about 95 percent of the credit card breaches it discovers are on its smallest business customers.[8]
- A small business HVAC supplier was reportedly the weak link in the Target data breach, in which more than 110 million credit card and other customer data files were compromised. Network credentials that Target had issued to the company were stolen in an email malware attack that began at least two months before thieves started stealing card data from thousands of Target cash registers.[9]

Hyperconnectivity gives small firms in New Jersey the ability to become global players. If they have a website, they are a global business. But, there is a downside.

- Law 1: Everything is being connected to the Internet
- Law 2: Everything that is connected to the Internet can be hacked
- Law 3: Everything else follows from the first two laws

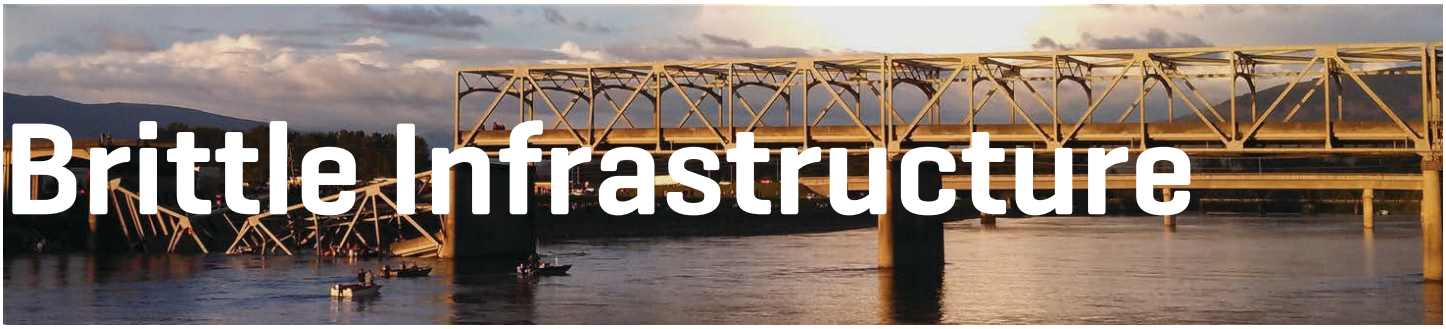
The U.S. government has identified cybersecurity as "one of the most serious economic and national security challenges we face as a nation." But, businesses, both large and small, are increasingly targeted for the theft of valuable intellectual property and business information — their own, their customers and other companies with whom they do business.

6 http://www.cmitsolutions.com/central-bucks/blog/cyber-security-tips-small-businesses.

7 http://www.marketwatch.com/story/study-shows-cyber-attacks-target-small-businesses-2013-06-05.

8 WSJ, Hackers Shift to Small Businesses, June 21, 2011 Geoffrey Fowler and Ben Worthen http://online.wsj.com/news/articles/SB10001424052702304567604576454173706460768.

9 http://krebsonsecurity.com/tag/target-data-breach/.



Brittle Infrastructure

"New Jersey has failed to fund adequate investment and maintenance for the infrastructure necessary to spur economic growth — to create economic success. The primary drivers of our capability for economic competitiveness — power, transportation and water — are deteriorating. New Jersey already faced challenging times, and then Sandy hit our homes, our communities and our lives."

Council of New Jersey Grantmakers, *Facing our Future*, April 2013
Photo by Martha T, under Creative Commons license, Flickr, http://bit.ly/1sTWDX7.

Indicators

- The Infrastructure Report Card study found that 36 percent of New Jersey's bridges were structurally deficient; the state had 213 high-hazard dams, meaning a failure could lead to a significant loss of life; and 78 percent of New Jersey's roads were in either poor or mediocre condition. The state also needed to invest nearly $7 billion over the next two decades to meet its drinking water needs, and another $9 billion upgrading wastewater treatment plants.[10]
- There is an annual loss of more than 20 percent of New Jersey's treated water supply because of leaking pipes.[11]
- Two of the top five largest sewage overflows during Superstorm Sandy were in New Jersey.

  Passaic Valley Sewage Commission, Newark, N.J.: After a wall of water at least 5 feet high inundated the Passaic Valley sewage treatment plant during the storm, 840 million gallons of untreated sewage flowed directly into Newark Bay between October 29 and November 3 when some treatment was restored. In addition, another 3 billion gallons of partially treated sewage was sent into the bay before secondary treatment was restored on November 16.

  Middlesex County Sewage Authority, Sayersville, N.J.: Two pumping stations that service the Middlesex County Sewage Authority plant were severely damaged by Sandy, sending over 1 billion gallons of untreated sewage into Raritan River and Raritan Bay. These two pumps were in Sayersville and Edison, NJ, and the Sayersville pump was so badly damaged that it was still sending untreated sewage into the river as of January 2013.[12]

10 American Society of Civil Engineers, 2009 & 2013 Report Card, New Jersey

11 Council of New Jersey Grantmakers, Facing our Future, April 2013

12 Alyson Kenward, PhD, Daniel Yawitz, Urooj Raja, "Sewage overflows from hurricane sandy", April 2013 Climate Central, http://www.climatecentral.org/pdfs/Sewage.pdf

In a study of fiscal rankings, New Jersey ranked 36th in cash solvency, 50th in budget solvency, 50th in long-run solvency and 39th in service level solvency. In a weighted index of fiscal factors, New Jersey ranked 50th in fiscal condition.[13]

Indicators

- New Jersey's recovery is lagging behind the United States, according to Bureau of Labor Statistics data. Employment growth in the state has been 2 percent, compared with 5.9 percent nationwide. Manufacturing employment has expanded in the United States by 5 percent since the end of 2009, but contracted by 4.5 percent in New Jersey.[14]
- New Jersey ranks 43rd in unemployment, with the unemployment rate at 8.6 percent.[15]
- New Jersey ranks 49th in the Tax Foundation's State Business Tax Climate Index, based on levels of corporate taxes, individual income taxes, sales taxes, unemployment insurance taxes, and taxes on property, including residential and commercial property. The ranks of neighboring states are as follows: New York, 50th; Pennsylvania, 24th; and Delaware, 13th.
- Moody's downgraded New Jersey's bond debt in December 2013.[16]

13 Sarah Arnett, State Fiscal Condition: Ranking the 50 States, George Mason University, Mercatus Center, January 2014. In the study, cash solvency represents a "government's ability to generate enough cash or liquidity to pay its bills. Budget solvency is a state's "ability to generate sufficient revenues over its normal budgetary period to meet its expenditure obligations and not incur deficits" Long-run solvency is the "long-run ability of a government to pay all the costs of doing business, including expenditure obligations that normally appear in each annual budget, as well as those that show up only in the years in which they must be paid" (e.g., replacement of capital assets, pension costs, etc.) Service-level solvency measures "whether a government can provide the level and quality of services required for the general health and welfare of a community.

14 http://www.bloomberg.com/news/2014-02-25/christie-patches-state-budget-after-battling-teachers-to-tunnel.html.

15 http://money.cnn.com/interactive/economy/state-unemployment-rates/.

16 2014 Business Tax Climate Index, Tax Foundation. http://taxfoundation.org/state-tax-climate/new-jersey.

On the Upside

"The inventions that had their genesis in New Jersey are mind-bogglingly varied: We've given the world the light bulb and tetracycline, the visible-light laser and bubble wrap, oral ACE inhibitors and the TV dinner."

NJ Monthly, Motherlode of Invention, November 15, 2010
Photo by Andrea Pacelli, under Creative Commons license,
Flickr, https://www.flickr.com/photos/andreapacelli/845829930/sizes/o/.

On the brighter side, New Jersey has a distinguished history of innovation that is the underpinning of both its competitiveness and resilience.

- New Jersey ranks third among the states in patents per capital — and is the only state in the nation with its own inventors' hall of fame.[17]
- New Jersey ranks seventh in the nation in innovation capacity. This is measured by: 1) share of jobs in high-tech industries; 2) the share of workers that are scientists and engineers; 3) the number of patents issued to companies and individuals; 4) industry R&D performance; 5) non-industrial R&D performance; 6) energy consumption; and 7) venture capital investment.[18]
- Three-quarters of all R&D investments are made by the private sector — and New Jersey ranks fifth in industry R&D as a percentage of worker earnings.[19]
- New Jersey has been called "the world's medicine chest." It is home to 17 of the 20 largest pharmaceutical companies and ranked 3rd in bioscience venture capital investments and is home to over 300 biotech companies.[20]
- The digital economy drives productivity. New Jersey ranks 9th among the states in digital economy measures as measured by: 1) the percentage of households online; 2) the use of IT to deliver state government services; 3) the percentage of farmers online and using computers for business; 4) the deployment of broadband telecommunications; and 5) health information technology use.[21]
- New Jersey ranks third among the states in the deployment of broad band and download speeds which enables both greater competitiveness (better and faster communications, distance education, telemedicine and other productivity-enhancing applications) as well as greater resilience.[22]

17 Statemaster.com. http://www.statemaster.com/graph/gov_pat_iss_percap-government-patents-issued-per-capita.

18 The State New Economy Index 2012, Information Technology and Innovation Foundation I(ITIF).

19 ibid.

20 The State New Economy Index 2012, Information Technology and Innovation Foundation I(ITIF).

21 ITIF, op cit.

22 ITIF, op cit.

Section 2
What the Experts are Saying About Resilience

"When preparing for turbulence, it is instructive to recall that Noah started building the ark before it began to rain." *Norman Augustine, CEO Lockheed Martin*

"It's too late for planning when you're getting hit." *Mohammed Ali, World Heavyweight Champion*

"Resilience is about bringing the future into the present so that you can do something about it now." *Adapted from Alan Lakein, author*

What is Resilience?

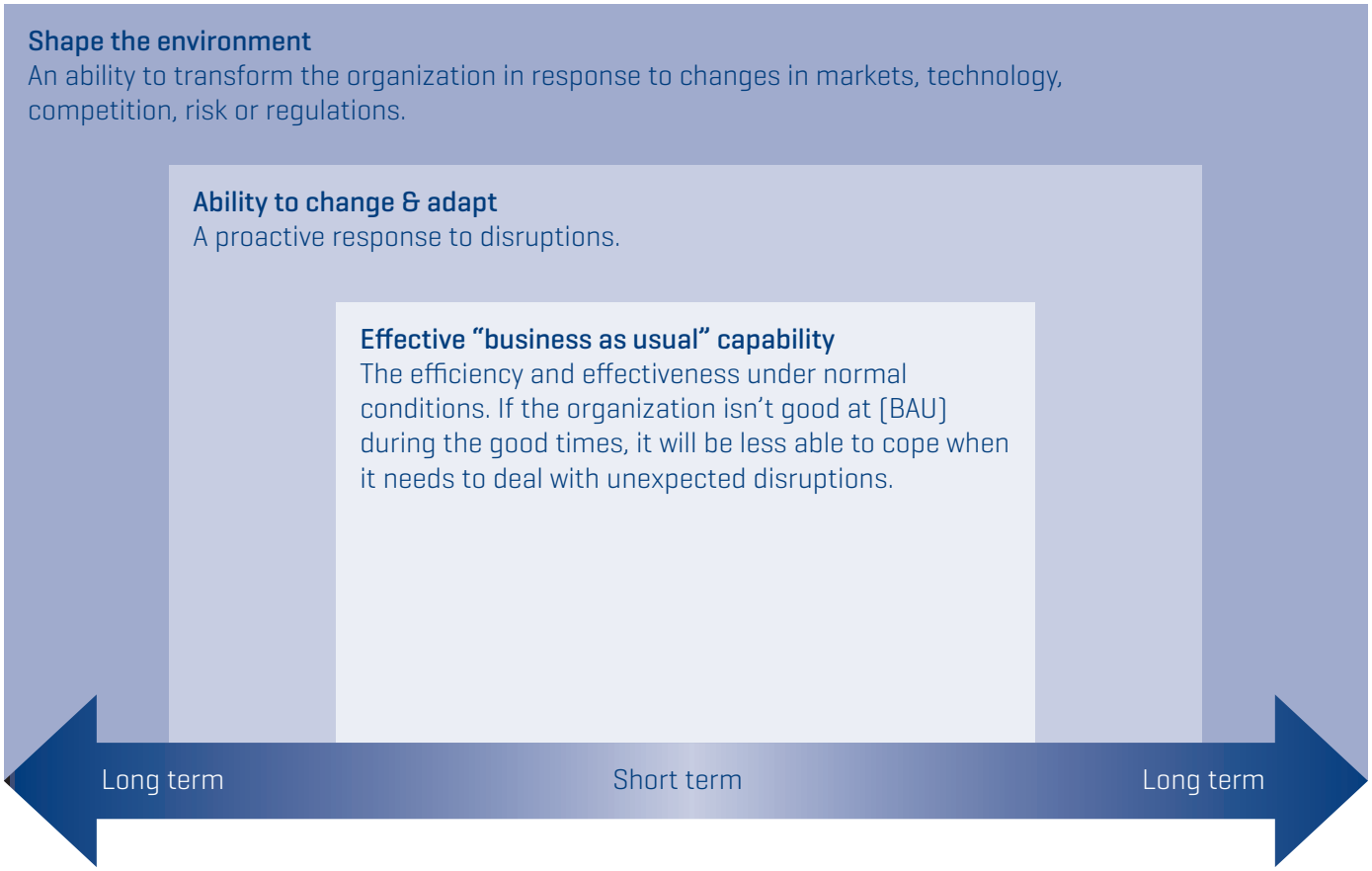
Although often described as innate human qualities — courage, grit, perseverance, resilience is a set of business practices and processes anyone can learn. These practices pre-empt the economic consequences of disruptions — whether they are triggered by natural disasters, technological or market changes, infrastructure disruptions, attacks or accidents. *US Resilience Project*

Guiding Principles for Resilience
U.S. Resilience Project

- The one thing we know with certainty is that the future will be volatile and uncertain. In the Age of Turbulence, business strategies that rely solely on accurate prediction and prevention are themselves high risk.
- Business resilience is deployed through a set of best practices, processes, networks and tools that enable risk intelligence, connectivity, agility and adaptability.
- The characteristics that make organizations resilient also make them more competitive, creating: 1. better risk intelligence to spot disruptors and seize opportunities 2. fast-reacting systems; and 3. collaboration between silos of expertise and know-how.
- Solutions — physical, virtual, intellectual — do not always need to be invented; many are hiding in plain sight and just need to be shared.
- The capacity for resilience must be put in place prior to a disruptive event — what military planners call Left of Boom — and all key stakeholders need to be engaged in the planning process.

CEO Perspectives on Resilience

Australian CEOs identified good operating disciplines, a capacity to change and adapt and the willingness to transform the organization as the key building blocks of resilience.



Australian Government, *CEO Perspectives on Resilience*, 2012

Resilience as a Business Strategy
Nathaniel Forbes, Business Continuity Expert

"A contingency planner plays defense; a resilience professional plays offense. A contingency planner protects the organization from losing value; a resilience professional will determine how to add value. A contingency planner understands recovery time objective (RTO); a resilience professional understands return on investment (ROI). A contingency planner is a cost center; a resilience professional could be a profit center. A contingency planner is an item on the income statement; a resilience professional is part of the Mission Statement."

Six Habits of Resilient Organizations
Peter+Trudy Johnson-Lenz. February 02, 2009

1. **Resilient organizations actively attend to their environments.** They seek out potentially disturbing information and test it against current assumptions and mental models. They work to detect the unexpected so they can respond quickly enough to exploit opportunity or prevent irreversible damage. In short, they anticipate to be prepared.

2. **Resilient organizations prepare themselves and their employees for disruptions.** They build teams that imagine possibilities and display inventiveness in solving problems. Resilient organizations cross-train employees in multiple skills and functions.

3. **Resilient organizations build in flexibility.** Although redundancy — backup capacity, larger inventories, higher staffing levels, financial reserves — is key, these are costly and not always efficient strategies. Flexibility offers a better approach.

4. **Resilient organizations strengthen and extend their communications networks — internally and externally.** A robust and redundant communications infrastructure holds up in a crisis. Resilient organizations use networked communications to distribute decision-making. As much as possible, they push decisions down to where they can be made most effectively, and thus quickly.

5. **Resilient organizations encourage innovation and experimentation.** Resilient organizations foster a culture of continuous innovation and ingenuity to solve problems and adapt to challenges. A side benefit is that employees who believe they can influence events that affect their work and lives are more likely to be engaged, committed, and act in positive ways associated with resilience.

6. **Resilient organizations cultivate a culture with clearly shared purpose and values.** When an organization's sense of purpose is shared by its employees, suppliers and customers, those networks can provide creative flexibility to help it through a disruption. Engaged employees will seek out opportunities to try new approaches, find creative solutions, and achieve greater results.

8 Principles of Resilience
FP, 2009

1. **Diversity:** Not relying on a single kind of solution means not suffering from a single point of failure.

2. **Redundancy:** Backup, backup, backup. Never leave yourself with just one path of escape or rescue.

3. **Decentralization:** Centralized systems look strong, but when they fail, they fail catastrophically.

4. **Collaboration:** We're all in this together. Take advantage of collaborative technologies, especially those offering shared communication and information.

5. **Transparency:** Don't hide your system - transparency makes it easier to figure out where a problem may lie. Share your plans and preparations, and listen when people point out flaws.

6. **Fail gracefully:** Failure happens, so make sure that a failure state won't make things worse than they are already.

7. **Flexibility:** Be ready to change your plans when they're not working the way you expected; don't count on things remaining stable.

8. **Foresight:** You can't predict the future, but you can hear its footsteps approaching. Listen, think and prepare.

Section 3
Making a Business Case for Resilience

Does This Sound Like You?

The most common reasons for not investing in resilience include:

- We don't have the resources (human and/or financial)
- Our organization is founded on excellence — we do not have to worry about crises
- We have insurance to cover our losses
- Our people will know what to do in an emergency
- We can't plan for crises — crises are unpredictable so we're prepared to take the risk
- Our quality is achieved through control — not by planning for something that might not happen
- We can react to crises once they've happened

Protecting Against Loss. Did you know:

- More than 43 percent of small businesses do not reopen following a disaster and 29 percent close for good. *Institute for Business and Home Safety*
- The number of loss events — storms, quakes, volcanoes, tsunamis — has been mostly on the increase, from less than 400 in 1980 to more than 800 today. Economic losses from disasters have been increasing, from about $50 billion a year in the 1980s to on average just under $200 billion a year by the last decade. *Munich Re, World Bank*
- Economic losses from disasters globally reached $130 billion last year. Only $44 billion of that was covered by insurance. *Swiss Re*

For business, losses don't stop at the front door. "Disasters have broader, more pervasive effects. When business is interrupted, skilled workers may leave, market share may be lost, relationships with suppliers and partners may be severed and reputation may be eroded. Once business is lost, it may never come back. Insurance can provide protection from asset loss and even supply chain interruption, but does not compensate for wider effects, such as low employee morale, increased absenteeism, stress or unrest, low productivity, declining customer demand and goodwill, and other impacts. In other words, insurance is not a substitute for sound risk-based investment decisions." *UN Office for Disaster Risk Reduction*

But, resilience to disaster has not inspired many small businesses to act; 48 percent of small businesses lack even a basic business continuity plan. So, let's look at the case for resilience on the upside.

The Upside Case for Resilience

In the Age of Turbulence, the capacity to manage the consequences of shifts and shocks — market changes, technology innovation, disasters and accidents — has become a core competency and competitive differentiator for companies. Why?

1. **Resilient firms are agile — and that makes them more competitive.** They are able to adapt quickly — and align strategy, operations, management systems and supply chains to changing environments.

Hancock Bank: Agility and Initiative
Community and Regional Resilience Initiative

With $6.5 billion in assets, the Hancock Bank, headquartered in downtown Gulfport, Mississippi, operates 160 branches across southern Mississippi, southern Louisiana, southern Alabama, and the Florida Panhandle. Katrina destroyed the bank's 300,000 square foot, 17 story headquarters building in Gulfport which contained corporate computer operations, the technology hub, check-processing, loan servicing, and other critical elements of the banking operation across four states. Yet Hancock Bank was the first bank to reopen on the Mississippi Gulf Coast after Katrina — in many cases without lights or phones.

Bank officers decided to allow people — Hancock customers or not — to draw up to $200 cash if they could simply write out their name, address, and social security number on a scrap of paper. Because of this decision, tens of millions of dollars flowed into these communities, much of it literally washed, dried, and ironed after being salvaged from waterlogged casinos, bank vaults and ATMs.

Hancock's mission-driven response put more than $42 million in cash into circulation in the week after the storm — cash supplied whether or not the person normally banked with Hancock. Three years later, CEO George Schloegel reported of that of the millions of dollars given to people for a name and address on a post-it note, all but $200,000 had come back to the bank. But, in the 5 months following the storm, Hancock Bank opened 13,000 new accounts. According to Schloegel, many people said, "You were there when I needed you. You're going to be my bank." Overall deposits grew by $1.5 billion.

2. **Resilient firms delegate decision-making authority to the employees closest to a problem, engaging their talents and commitment.** Employee engagement is also one of the critical success factors for every firm.

UPS: Integrating Operating Discipline with Individual Creativity

UPS tells its drivers to do whatever it takes to deliver packages on time. They encourage improvisation to solve all the small things that can go wrong every day. At the same time, they have clear rules and regulations, such as always putting their keys in the same place, closing truck doors the same way, making only right turns 90 percent of the time to save time and fuel, and so on. Those routines, combined with creative improvisation, allowed UPS to deliver packages the day after Hurricane Andrew struck, even to people temporarily living in their cars. *Lenz & Johnson-Lenz, Six Habits or Resilient Organizations*

3. **Resilient firms look across silos to maintain operating disciplines, spot trends, and streamline operations.** They understand that value creation and value preservation are two sides of the same coin.

Georgetown University: Making Resilience a Productivity Driver

For Georgetown University, Hurricane Katrina became a driver to link revenue streams, assets and business processes to different areas of risk exposure. Under a traditional risk management framework, decisions about facilities management, safety and insurance were made independently. The piecemeal approach resulted in over-investment, under investment and inefficient investment. Georgetown reorganized its risk management processes as a continuum, beginning with the identification of its core missions and revenues streams and working backward to understand what key risks could disrupt them. This risk and resilience plan had the corollary benefit of lowering the university's insurance premiums which freed up funds for investment in business interruption insurance that ultimately led to higher bond ratings and a lower cost of capital. *Van Opstal, Prepare: Why Enterprise Resilience Matters*

4. **Resilient firms share the same qualities as innovative firms.**

The qualities that make an organization resilient — nimble, adaptive, risk intelligent, cross-functional — also support their capacity for innovation.

Commonalities between Resilient and Innovative Firms

- Agile. Anticipatory. Adaptive.
- Pervasive Situational Awareness (for both risk and opportunity)
- Devolved decision-making authority encouraging capacity to innovate/improvise
- Transparency of assets: human and materiel
- Connected and cross-functional teams
- Collaborative partner networks
- Coordinated communications flow up and down the organization

Business Benefits of Resilience

Improved Compliance Capability

- Regulatory and legal requirements met at optimum cost
- Mitigated scrutiny by media/regulators

Cost Savings and Productivity Gains

- Streamlined process
- Improved workflow
- Reduced risk of service disruption
- Improved crisis response and recovery
- Greater protection of assets
- Lower insurance costs

Creation of New Opportunities

- Greater risk intelligence
- Capacity to take on more risk
- Create tools that reinforce both innovation and resilience capacity
- Talent magnet

Competitive Benefits

- Customer fulfillment
- Employee confidence
- Community standing
- Improved shareholder value
- Positive brand reputation

Reinforcing the Business Case for Resilience
Professor Yossi Sheffi, MIT

Resilience-building projects can be a tough sell within corporations — even when enterprises endure serious disruptions to their businesses. Corporate memories tend to be short, and there are many other demands on a company's resources. The whole key to resilience is to justify it on the basis of day-to-day operations.

Identify situations where resilience is a by-product.

- Amazon same-day delivery requires a warehouse network that also enables quick recovery if one or more facilities experience a disruption.

Hitch resilience to other goals

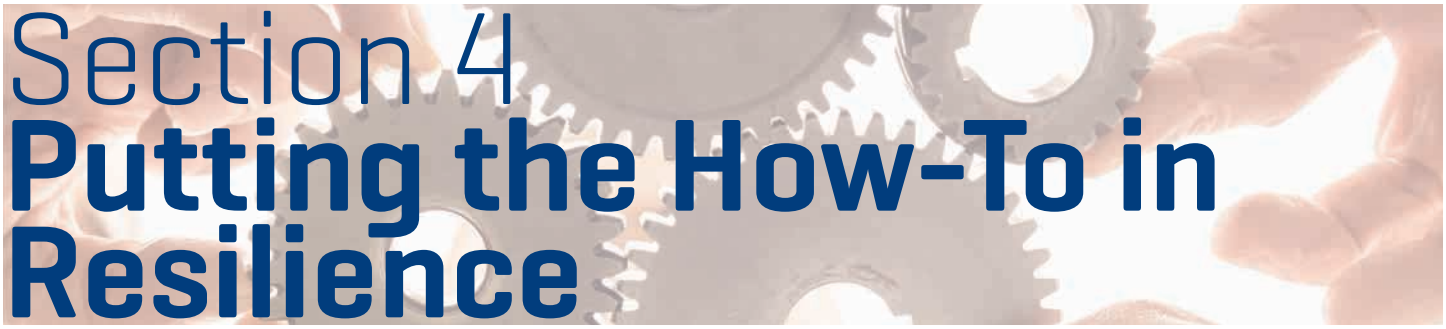
- Firms sometimes seek to strengthen diversity by enabling women with children to telecommute for improved productivity and less absenteeism. But, this also create a communications infrastructure during business disruptions.
- Automated notification software is great for emergencies, but can also perform multiple functions, such as notifying employees of schedule changes or important company news.

Highlight other benefits

- Walmart created a capability for supply chain gymnastic to turn inventory quickly, but that visibility into its supply chain also allows for a more efficient flow of supplies in crisis situations.

Sydney Water: Adding Value
Nathaniel Forbes, Business Continuity Expert

Sydney Water worried that its Emergency Operations Center (EOC) was underutilized because people thought of it as a place to go only during emergencies. They renamed it the "Collaboration Center" and encouraged employees to use it like a meeting room, only much better-equipped. A room that was underutilized is now utilized all the time, with the added benefit that people are more comfortable suddenly being called into the EOC in an emergency, because they do it regularly anyway. That change added value by making more and better use of an underused resource.



Section 4
Putting the How-To in Resilience

"Forget the adage about learning from your own mistakes. It's safer and more entertaining to learn from other people's mistakes!" *Unknown*

Resilience is not just about who you are, but also what you do. It is a set of business best practices and tools that give companies and communities an ability to adapt to the unexpected, respond quickly and mitigate the impact of a disruption — irrespective of trigger. Some of the best solutions are hiding in plain sight. What is needed is to capture, share and deploy the best practices that create more resilient businesses, communities and economies.

Integrating Resilience into Business Strategy (forthcoming article)
Debra van Opstal, US Resilience Project; John Vargo and Erica Seville, Resilient Organisations

1. **Make Adaptive Capacity a Core Competency**

If change is the new normal, then adaptive capacity is the requisite for dealing with this reality. Adaptive capacity is built from an organization's risk intelligence, its flexibility, and its readiness to change

➡ **What to Do**

- Test risk assumptions continually
- Break down silo walls
- Increase responsiveness
- Encourage continuous experimentation in business processes

2. Foster Leaders People Want to Follow

The way people throughout an organization demonstrate leadership influences resilience - whether the CEO of a major corporation or an employee working at a call center.

➡ What to Do

- Focus on values.
- Ensure leaders are accessible and visible.
- Inspire good leadership from others.
- Make resilience everyone's responsibility.

3. Become a Learning Organization

With tougher competition, rapid market shifts, operational volatility, and technology disruption, a learning enterprise can evolve continuously — and sometimes rapidly — to changing risk environments. Although products, services and processes can be imitated, an organizational structure that encourages new ideas, spreads them across the organization and embeds them in business strategies is not easily reverse engineered.

➡ What to Do

- Create concrete learning processes — and make them available at all levels.
- Enable an environment of trust (encourage contrarian thinking)
- Catalyze diversity of ideas that stimulate out of the box thinking (eg. multi-generational teams).

4. Build Social Capital

Social capital, in partnership with financial capital, is essential to a successful venture. Social Capital is the networks and resources available to people through their connections to others.[1] This higher level of trust yields faster and more coordinated responses as well as improved process and product innovation.

➡ What to Do

- Build employee engagement as a people process, not a "Human Resource"
- Leverage co-creation processes
- Link to community organizations

5. Practice Resilience as a Team Sport

Organizations cannot be resilient if the communities in which they operate, the workers they employ and the suppliers and customers on whom they depend are not also resilient. Networks for collaboration are one of the key elements of resilience – across the company and over the fence line.

➡ What to Do

- Create a culture of resilience activism within the organisation
- Connect resilience to supplier and customer networks.
- Leverage existing relationships.
- Collaborate for economic resiliency

1 Daniel Aldrich, "Building Resilience: Social Capital in Post-Disaster Recovery", 2012.

6. Design Resilience in Operating Disciplines

Simple, standardized and sustainable operating disciplines are a critical component of operational excellence. However, they also can greatly increase the chances of preventing and surviving disruption.

➡ What to Do

- Prioritize operational discipline — and provide sufficient resources to support it
- Communicate up, down and across the organization
- Identify commonalities of solution across the organization
- Practice what you preach — stick to the discipline

7. Look Beyond Risk to Seize Opportunity

Organizations that actively manage their capability to deal with disruption forearm themselves with the capability to be future-ready. The same systems that enable organizations to flex in times of crisis to meet unexpected disruptions also allow them to take on new risks deliberately — with confidence in their ability to manage those risks and create new business opportunities.

➡ What to Do

- Link resilience to day-to-day operations.
- Choose in advance whether to pre-empt, mitigate or respond to disruptions – and weigh in the potential productivity and innovation gains.
- Put on "thrive glasses" when dealing with potential or real disruptions.
- Pull out your strategic plan when crisis strikes to identify the potential for fast track change.

Focus on Values

"Companies that have decided what they stand for in advance of a crisis manage crises best."
Norman Augustine, former CEO of Lockheed Martin

"A key to organizational resilience is to tell the stories that reinforce core values and culture. If we get into a crisis situation, we go back to these core values. This company is 206 years old. When our founder created the company, he set a standard that has created a culture of safety. He built his home above the black powder mill. His home was the closest to the mill. If there was an explosion, he was going to feel it first. That sent a powerful message about caring about safety and caring about our people. Anytime there was a new formulation of powder, a family member of his was present at the testing of the process. If it wasn't safe enough for a family member, it wasn't safe enough for an employee."
Chad Holliday, former CEO Dupont

Test Assumptions Continually

"It ain't what you don't know that gets into trouble. It's what you know for sure that just ain't so." *Mark Twain*

Risk-intelligent enterprises look for evidence that their assumptions are wrong — and that helps spot emerging business disruptors as well as manage the effects of those disruptions. For example, in the aftermath of Hurricane Andrew in 1992, the telephone companies discovered that the critical chokepoint in restoring service was not the poles, wires and switches that it had stockpiled in anticipation of a disruption, but the need for day care centers. Many of the phone companies' field operations employees had children and relied on day care. When the centers were destroyed by the hurricane, someone had to stay home to take care of the children — thereby reducing the workforce at the moment when it was needed the most. The problem eventually was solved by soliciting retirees to tend ad hoc day care centers, thereby freeing working parents to assist in restoring the telephone network.

Break down Silos

"Training often gives people solutions to problems already solved. Collaboration addresses challenges no one has overcome before." *Marcia Conner, Executive Adviser*

James Hush, Vice President, Strategic Security and Aviation at the Coca-Cola Company noted that: "Coca-Cola's strategic approach integrates five processes — Enterprise Risk Management (ERM), Incident Management and Crisis Resolu•tion (IMCR), Emergency Planning (EP), Business Continuity Planning (BCP), and Disaster Recovery (DR) to deliver our resilience capability. In addition to the formalized global process framework outlined above, guiding principles such as collaboration and transparency by all stakeholders, alignment on strategies, process objectives, and the picture of success are critical to achieving global consistency in our resilience capability."

Put People First

"Our most important assets are the ones that walk through the front door every morning." *Ray Gilmartin, former CEO Merck &Co*

Don Wirth, former Vice President for Global Supply Chain at Dupont noted: "The number one priority is to assure the safety and welfare of employees and their families. Hurricane Irene came through on Saturday night. By Sunday night, our "I'm OK" system had accounted for the status of all 18,000 employees in the affected region. We also knew where our people were struggling with power outages. Disaster mitigation processes must be governed by very clear goals. After people, DuPont's priorities are: 2) protect the environment 3) restore orderly plant operations 4) Restore customer deliveries. These principles provide guidelines for our actions in every crisis and disaster response. We believe that if you don't have a cohesive set of principles, it's impossible to make informed choices. In our case, meeting our goals depends on our people. Without them, none of the other priorities can be implemented."

Supply Chain Best Practices for Small Businesses

- Know who your suppliers are.
- Vet Suppliers as part of the RFP process.
- Tailor contract terms and conditions to include business continuity, security and disaster resilience capabilities.

Incorporate Resilience Best Practices in Your Supply Chain
Institute for Business and Home Safety

Looking across your supply chain, ask yourself:

- Which products or services are most critical for your success – for profitability, reputation, and competitive advantage?
- Do you have any mission critical or time-sensitive activities, services, devices or systems whose failure or disruption in normal business hours would result in a severe disruption of business operations? If so, are you assured the suppliers for these activities will be able to deliver?
- Would a supplier's inability to deliver goods or services cause a "chokepoint" or bottleneck, in your operations? If so, can you find an alternate supplier, preferably before a disruption occurs?
- Do you have any suppliers that are sole source providers of goods or service, i.e. you can only get what you need from that one supplier? If so, can you accept the risk? If not, what is your alternative?
- In your normal daily operations, have you experienced fluctuations in demand caused by supply constraints or demand spikes (e.g., during a holiday season or as a result of a successful promotion)? If you have planned for those contingencies, the same strategy could apply in planning for a natural disaster (e.g., spike in demand for building supplies).
- Do your suppliers have evidence of systems, plans and policies in place that will allow them to meet their obligations to you? Have these procedures been tested?
- What is the potential for infrastructure failures that could affect your suppliers' ability to provide goods or services (e.g., electric power, telephone service, internet)? These failures could be triggered in geographical areas that experience frequent severe winter weather, tornadoes, etc.

Look Up Your Supply Chain (up as well as down)
U.S. Resilience Project

- Vetting suppliers is critical, but equally important is knowing how dependent your company is on any one customer — and how prepared your customers are to deal with disruption — theirs or yours.
- How diversified is you customer base? If one of your customers is disrupted, how will the slowdown or loss of their business affect your organization?
- Do your customers have resilience systems, plans and policies in place that will allow them to continue operating in times of disruption?
- Do you and your customers have a disruption notification system that will you to speed up or slow down production or delivery caused by a disruption on their end?

Practice Preparedness

"At DuPont, we trained every year, at least three times a year, for specific risks — and not one of them ever happened. But, we found that if our systems were resilient enough — if we built the fundamental skills and operating disciplines — we were able to cope with whatever came along." *Chad Holliday, former chairman and CEO, DuPont*

Preparedness takes practice — teams don't fall smoothly in place on the day of a disaster. Chad Holliday noted that DuPont took every opportunity to exercise its crisis management team, including planning for a last minute visit by the President of the United States.

The benefits from joint drills extend far beyond any single crisis scenario. They create the foundation of understanding about the differences in culture, organization and perspective that is essential to collaboration before, during and after a crisis.

The Oscar-nominated films, Captain Roberts, told a gripping story of the hijacking of the Maersk Alabama — the first US flagged ship in 200 years to be attacked by pirates. What was less well known is that the Maersk Line and the US Navy had drilled that precise scenario just two weeks before the attack occurred. According to a Maersk executive: "Within 15 minutes of the attack, we established a complete crisis communications tree between Maersk and key stakeholders in the government. Because of the drill, we knew each other's procedures and people."

Set Up a Crisis Management Team
Norman Augustine, the former CEO of Lockheed Martin

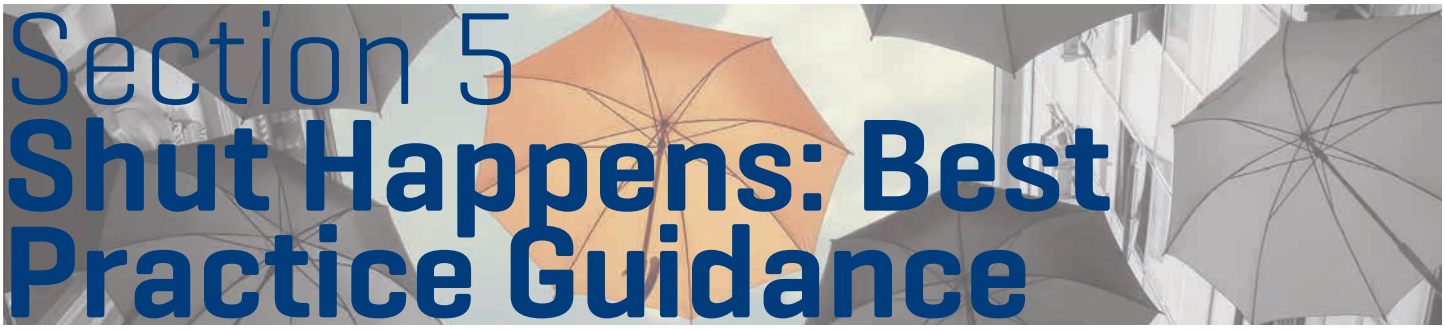
"My experiences in the triage stage have taught me four lessons.

First, it is wise to have a dedicated group of individuals working full-time to contain the crisis; others still have a business to operate. That is, a "fire wall" should be built between the crisis management team, led by the CEO, and the business management team, led by an appropriate senior operating person. Too many executives seem to have forgotten the words spoken so generously by Casey Stengel when his New York Yankees won the 1958 World Series: "I couldn't done it without my players."

Second, a single individual should be identified as the company spokesperson, the one who makes all public comments. This lesson stems from another of my laws: If enough layers of management are superimposed on top of one another, it can be assured that disaster is not left to chance.

Third, a company's own constituencies -its customers, owners, employees, suppliers, and communities should not be left to ferret out information from the public media. With all the pressures on management to respond to news reporters, one must not neglect those who have a special need for information.

And fourth, a devil's advocate should be part of the crisis management team-someone who can tell the emperor in no uncertain terms when he is wearing no clothes."



Section 5
Shut Happens: Best Practice Guidance

Disruptions come in all sizes and flavors. But, there is a set of tools and strategies that leave companies "poised to adjust" to turbulence.

According to the Institute for Business and Home Safety, more than half of small businesses have no disaster recovery plan, and of those that do, the vast majority spend very little time making sure that their information is updated and understood by all who need to implement it. Not having a plan, and not exercising the plan, is almost like making the same mistake twice — and the result can be devastating to businesses. The following offer best practice guidance from the experts on how small businesses can weather any storm.

Basics of Business Continuity
Resilient Organizations, New Zealand

Identify core business needs

- What are the things your business needs to operate and how might they be vulnerable?
- How vulnerable to damage are your premises?
- How vulnerable are your key suppliers?
- What are your risks in getting things you need to operate?

Getting back together

- Do you know how to contact your staff, your suppliers and your key customers if your IT system is down and you cannot get into your office?
- Do you have alternative contact information when landline or mobile networks are down?
- Does anyone else in your organization know where to find this information if you are not there?
- Do your staff and their families have a plan for communicating in a crisis?

Backup your data

- Which data is critical — just the accounting data or also customer contact lists, process manuals, important contracts?
- Where is your backup data stored?
- What kind of disaster would destroy your back up data too?
- How do you reduce this risk?
- How would you restore that data? What equipment do you need? Is that equipment easily obtainable?
- Do you need to consider other options such as cloud computing?
- What information, that is vital for business, is NOT on your computers or backups?
- Does anyone else in your organization know where to find and retrieve this information if you were not there?

Test and Recheck
Institute for Business and Home Safety

- Have my business' risks or hazards changed?
- Has my business added any new sales offices, or operational locations that need to be included in the plan?
- Has my business added new departments, products or services?
- Have there been any process changes that need to be included?
- Have the priority levels of my documented business functions changed?
- Has my business added or changed any suppliers/vendors, key contacts or key customers?
- Is the contact information up-to-date for existing suppliers/vendors, key contacts and key customers?
- Have I updated information on specialized equipment needed to resume each business function?

Top 5 Lessons from Sandy
Institute for Business and Home Safety

- Every Storm is Different: Do not plan for the next disruption based on what happened in the last.
- Families Come First: Employers should recognize that employees will not return to work until they feel their families are safe. Employers should help educate them on home emergency plans.
- Communicate Before, During and After: Let employees update their status and employers communicate when to return to work. Use phone trees, social media or Intranet site postings.
- Protect your Assets: Pay attention to strong roofs and proper elevation against flooding. Install shutters, plywood or panels within 24 hours of an impending storm. Move equipment, inventory, records and people away from potential harm due to wind or water
- Test and Re-test: Practice the plan and explore what has changed in your business that might make your plan obsolete.

Timeline and Checklists
Institute for Home and Business Safety

	5 DAYS BEFORE STORM	72 HOURS BEFORE STORM
Communications	▪ Notify employees of potential for severe weather ▪ Prepare employees for emergency plan to be implemented	▪ Notify key customers, suppliers, and partners of office/facility closing and contingency plans (post office, FedEx, UPS, cleaning service, building management, vendors, etc.) ▪ Instruct employees with laptops to confirm that they can connect to your business' server from home ▪ Remind employees to keep cell phones fully charged and have a car charger on hand ▪ Advise employees to frequently check employee emergency hotline and/or company intranet/ website for office/facility updates
Operations	▪ Inspect roof and grounds for loose debris that may become a hazard in high winds. If staff or temporary help is available, begin removal of the debris, otherwise the removal may be done at the 72-hour interval	▪ Remove or secure all loose roof and ground items, including landscaping, that may become wind-borne debris ▪ Clear roof drains, gutters and downspouts of debris to prevent water back-up ▪ Clean out all debris from outdoor perimeter drains, particularly where ground slopes toward the building ▪ Fill emergency generators with fuel and contact fuel suppliers with anticipated needs for post-storm deliveries ▪ Ensure fire protection systems are in working order ▪ Establish pre-storm business hours and notify employees of office closure details ▪ Make any necessary alternative travel arrangements for employees away on business ▪ Customize messages for business' website, telephone recording, employee intranet, etc. ▪ Decide which outstanding invoices, bills, expense reports, etc., should be paid before a possible closure
Materials	▪ Provide a list of storm tips and needed supplies to help employees prepare their homes and families. ▪ Distribute designated emergency telephone numbers and key contact information (i.e., an employee emergency wallet card).	

	48–24 HOURS BEFORE STORM	RECOVERY
Communications	▪ Advise employees to check the status of your office/facility at least twice per day ▪ Designate times for key staff members to call into conference calls for situation overviews	▪ Activate employee communications tools and local media contacts to give notice of re-opening ▪ Employees returning to the building should be instructed to examine their work area, test all office equipment and report findings back to a designated staff contact ▪ Notify key customers, suppliers, and partners of office/facility re-opening and any necessary property or operational changes resulting from storm damage
Operations	▪ Process accounts payable and payroll ▪ Protect or relocate vital records ▪ For hurricanes and other high-wind events, install window protection. If window protection is unavailable, close all window blinds and cover office equipment with plastic sheets or tarps ▪ Close and lock all office doors, especially perimeter offices ▪ Seal all water entry points — such as utility penetrations — into the building and install flood protection, including first-floor drain plugs ▪ Conduct full/partial shutdown procedures. If volunteers are to remain onsite during the storm, make sure they have a safe and secure area. If conditions permit, instruct them on how to monitor, document, and mitigate against leaks and water infiltration in critical areas with vital equipment ▪ Disconnect all electrical equipment from power sources ▪ Place a "Closed" notice on office/facility main entrance	▪ Designated personnel should return to the facility, assess conditions, document damages and notify the emergency operations teams of their findings ▪ When it is deemed safe, designated personnel should begin start-up procedures ▪ When all safety and operational concerns are addressed and an "All Clear" is provided, employees can return to work ▪ Take an overall inventory, including photos of all damaged property, and report damage and related expenses to your insurance company
Materials	▪ Make sure all employees with calling responsibilities have the most updated version of the company telephone call list in multiple formats (hard copy, electronically, etc.)	

Where To Get More Information

Open for Business EZ has a range of tools and business processes to improve business continuity and minimize the impact of disruptions.

- http://www.disastersafety.org/disastersafety/open-for-business-ez/

FEMA's ready.gov websites spans preparedness and planning to test and recovery.

- http://www.ready.gov/business

Prepare my Business has planning tools and monthly webinars to help reduce risk and accelerate recovery.

- http://www.preparemybusiness.org/

American Red Cross "Ready When the Time Comes" program recruits and trains volunteers from local businesses in emergency preparedness.

- http://www.redcross.org/supporters/corporate-foundations/ready-when-the-time-comes

Resilient Organisations, University of Canterbury New Zealand has resilience guidance for small business and a short resilience thumbprint survey for businesses and employees.

- http://www.resorgs.org.nz/images/stories/pdfs/OrganisationalResilience/sme_resilience brochure.pdf

About the U.S. Resilience Project

Building on Business Best Practices to Meet National Challenges

The primary goal of the U.S. Resilience Project (USRP) is to strengthen resilience by:

- Documenting the business and economic case for resilience;
- Capturing best practices, processes and tools for resilience and preparedness; and
- Catalyzing partnerships that build on common interests and key competencies in the public and private sectors.

www.usresilienceproject.org

U.S. Resilience Project
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