Chapter 1

Introduction and Overview

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Overview

Natural disasters represent one of the most significant and costly threats to business today. The effects of damage to businesses, homes, roads and utilities ripple throughout all aspects of the economy of the communities, regions and states affected by natural disaster. For a business, the impacts range from the cost of building repairs, to service disruption, closures, the inability to move goods and services and temporary or permanent unemployment for workers. The broader economic impact can be crippling when you add the infrastructure repair costs borne by taxpayers.

The upheaval from a natural disaster can vary in time and scale. For example, a lack of electricity, water, or wastewater services may mean businesses cannot operate normally and thus remain closed. Damage to roads, bridges and homes may impact the work force who cannot safely commute to work or may be focused on putting their homes and lives back together. Road closures may leave employees stranded, break supply chains and businesses may also be unable to deliver their goods to market. Rising floodwaters may destroy records, equipment or inventory, costing time and money for those impacted businesses. Costly building repairs and high insurance deductibles often exceed the available capital for small businesses to remain open. According to the Federal Emergency Management Agency (FEMA), nearly 40% of businesses do not reopen after a disaster and data from the US Small Business Administration indicates that over 90% of businesses fail within two years after being struck by a disaster.

Even when not directly impacted, many businesses still fail after a disaster due to public perception. Images of floodwaters rushing through a downtown, a rollercoaster sitting off its pier in the ocean, or a covered bridge floating down river, can convey that a community is "closed for business." These impressions can take years to reverse, which may stifle the local economy and stymie the community's ability to recover.

Records from Vermont's Division of Emergency Management and Homeland Security (VT DEMHS) show the state has experienced flooding every year since 2007 and had at least one federally declared disaster in 21 of the past 25 years. While flooding and other natural disasters are not uncommon in Vermont, the scale and impact of the flooding in August 2011 served as a wake-up call and raised awareness of the need for improved strategies to protect areas of key economic importance.

In 2011, Tropical Storm Irene severely damaged Vermont's transportation network, including the closure of 146 state road segments (approximately 531 miles) and 34 state bridges; damage to 2,260 local road segments; the closure of 175 local roads; damage to 289 local bridges of which 90 were closed. Thousands of Vermont's businesses were affected by the flooding and suffered prolonged disruptions to operations.

Given the trend of more extreme and costly weather events over time, disaster preparedness makes good business sense. Understanding and managing risk, is the first step in helping communities and businesses reduce repair costs and remain open after a disaster.

After Tropical Storm Irene, Vermont Governor, Peter Shumlin challenged communities to "build back stronger than Irene found us." The Vermont Economic Resiliency Initiative (VERI) is designed to help meet that challenge. It is modeled after a successful project in Bennington, Vermont that minimized business interruption and saved taxpayers money by substantially reducing flood recovery costs.

With support from the US Department of Commerce, Economic Development Administration (US EDA), the Vermont Agency of Commerce and Community Development (VT ACCD), working with the Agency of Natural Resources (VT ANR), Agency of Transportation (VTrans) and the Regional Planning Commissions (RPCs), launched VERI to better understand Vermont's flood risk and identify and implement projects that protect lives, help businesses remain open and reduce costs to taxpayers for repetitive repair to infrastructure.

VERI built upon the relationships developed and strengthened during Tropical Storm Irene's recovery – and brought together state, regional and local partners to create a new model to help towns identify changes and investments needed to break the cycle of repetitive loss, speed post-disaster economic recovery and reduce the long-term financial burden of disasters on impacted communities, businesses, and individuals. VERI expanded state and local capacity to identify and prioritize risks and take steps to ensure economic viability in the years to come.

This report describes the data, collaborators and the step-by-step process used to pinpoint implementation projects by combining inundation and fluvial erosion flood maps with data on critical infrastructure and key economic assets. It describes the methodology to rank and select communities for detailed analysis as well as how to engage and involve communities in the process to identify policy changes and projects to minimize the economic impact of future floods.

While focused on Vermont, VERI's process, recommendations, conceptual designs and tools create models to help other states and communities analyze and identify flood risk, policy changes and public projects that can reduce threats to their economy. The chapters summarized below may be used as a comprehensive resilience guide book or as stand-alone documents to help communities and states tackle specific issues.

Chapter 2: Assessing State-Wide Risk, Economic Activity and Associated Infrastructure. This chapter explains how Vermont evaluated and weighed the many hazards and the steps used to measure and evaluate local economic activity on a statewide basis. It details the state's process to create a statewide flood map that combined FEMA's inundation maps with protocols for a state river corridor map that delineated fluvial erosion hazard areas. It then describes how the statewide flood maps were combined with existing data on road infrastructure and buildings to assess and rank economic vulnerability.

Chapter 3: Screening Process to Select Communities. This chapter describes the community selection and prioritization process to select five communities to participate in the project, along with the reasoning and alternatives the team considered to help other states and regions focus their efforts on areas with the greatest need and impact.

Chapter 4: Partnering with Communities. This chapter details the on-the-ground project work – the data gathering, field analysis, public input and the process to identify specific projects designed to avoid, mitigate or reduce risk to businesses. A final report was prepared for each community and contains a chart of recommendations along with cost range, the businesses and employees that would benefit and it highlights likely partners and funding sources. The chapter describes how the team worked with each community to prioritize the recommendations and set the stage for implementation. The final five community reports can be found in Appendix 4.4 in Chapter 4.

Chapter 5: VERI: Part of the Quilt to Rebuild a Stronger Vermont. This chapter provides a snapshot of lessons learned in Vermont and how projects like VERI and other related initiatives helped advance an integrated, long-term strategy in response to these lessons to protect our people, property, environment and economy from floods and other disasters. Policy, legislation and programs that provide long-term systemic changes are highlighted along with Vermont's collaborative approach.

Chapter 6: Toolbox for Local Governments and Business. This chapter provides an 'à la carte' mix of 101 overviews, checklists and more advanced tools that communities and businesses can use to weather the next storm. Documents are grouped into the following categories: floodproofing, managing debris, reducing stormwater with green infrastructure, protecting floodplain river corridors, planning and preparing for disasters and were developed based on the needs identified in the five communities.

Applying the lessons learned from Tropical Storm Irene's recovery and implementing the recommendations resulting from VERI will take time, but work has already begun to bring state agencies, local government, non-profits, philanthropic organizations and others together to determine how best to implement priority projects outlined in this report.

Flooding due to severe storms is certain to happen again in Vermont and other states, but over time, VERI's process, along with data, step-by-step analysis, community outreach, and tools outlined in this report can help communities in Vermont and other states identify and address vulnerabilities to break the cycle of repetitive loss, speed post-disaster economic recovery and reduce the long-term financial burden of disaster.