Module 3: Assessing Risk

Now we will determine how likely each hazard is and how severe its impact would be on your operations.

The goal: translate data and perceptions into clear priorities for action.



Climate Resilience Action Plan Steps

Note that we're not predicting disasters; we're identifying vulnerabilities so you can prepare wisely!



0

Asset Inventory

List the assets that can contribute to your financial well-being or the success of your business.

1

Understand Exposure

Evaluate business assets and their exposure to climate-related hazards.



2

Assess Vulnerability and Risk

Identify the business assets most vulnerable and at-risk to climate-related hazards.

3

Investigate Options

List strategies to reduce the greatest climate-related risks to vulnerable assets.

4

Prioritize and Plan

Design an implementation plan for the strategies that are most likely to reduce vulnerability and risk.

5

Take Action

Implement and communicate the plan with employees (if applicable). Monitor. Iterate.

Vulnerability and the State of Vermont

First, let's looks at how the state assesses risk and the tools they have available.

State of Vermont's Hazard Ranking and Vulnerability Assessment System

- The state's assessment looks at not just physical infrastructure, but also people, the natural environment, and the economy.
- **Your organization is a part of this ecosystem;** therefore, you should at least understand and try to align your resilience plan with Vermont's broader resilience strategies.
- This assessment also helps inform and reinforce local climate resilience plans.

The State of Vermont Identifies Vulnerabilities in Four Categories:

1



Built Environment

2



People

3



Natural Environment

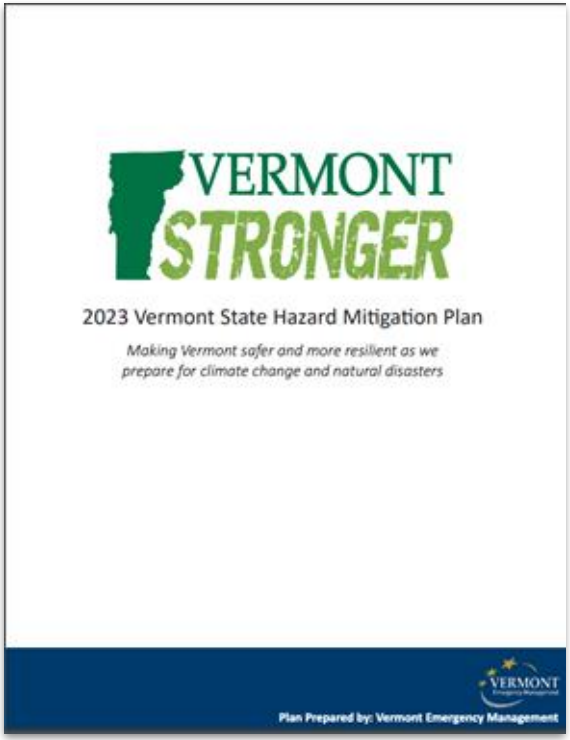
4



Economy

Here's How Vermont Ranks Hazards

Combining likelihood and impact.



Hazard Assessment Ranking Criteria:

Likelihood Scale:

1. **Unlikely** (<1% per year)
2. **Occasionally** (1–10% per year)
3. **Likely** (>10% per year)
4. **Highly Likely** (>75% per year)

Impact Scale:

1. Low impact
2. Major impact

2023 Plan: https://vem.vermont.gov/plans/SHMP

2026 Updates: https://vem.vermont.gov/document/vermont-state-hazard-mitigation-plan-annual-report-2025

Why Local Plans Matter



Your business depends on your community's infrastructure.

Local Emergency Management Plans (LEMP)

Local Hazard Mitigation Plans

- ✓ Provide coordination and resources during recovery
- ✓ Integrate Vermont's state hazard framework into your plan

You can find the local plans that have been filed with the state at https://vem.vermont.gov/plans

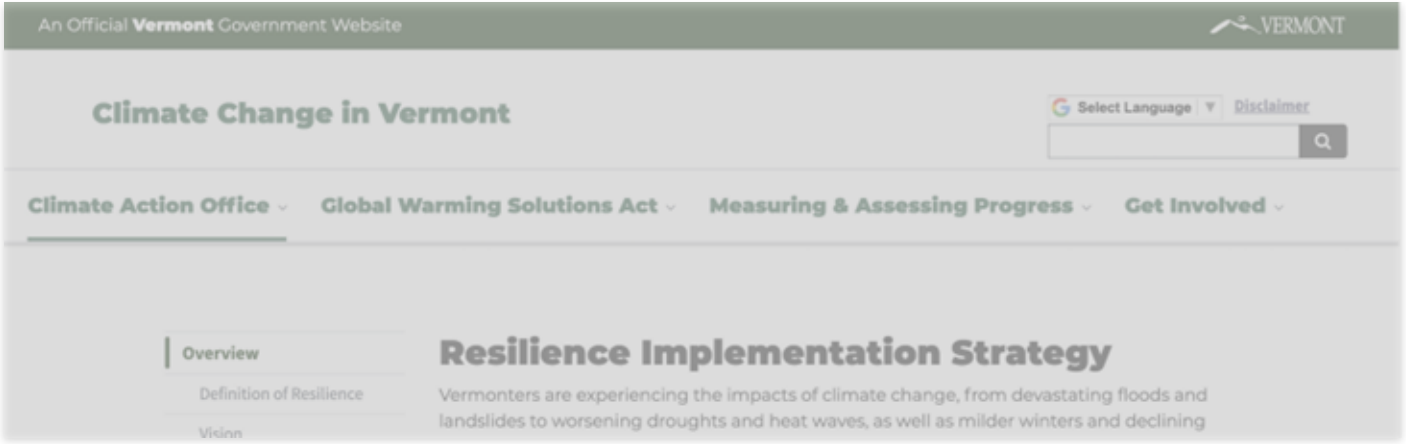
Taking Action: Vermont's Resilience Implementation Strategy

(Released in September 2025)

Build and Adapt to Climate-Related Hazards

Priority Actions to Protect Communities

Strengthen Infrastructure, Economy, Natural Environment



Checkout https://climatechange.vermont.gov/resilience-strategy/overview to learn more.

Examples from the Vermont Resilience Implementation Strategy

Economic and Environmental Sustainability

This core component acknowledges the interconnectedness of climate resilience and Vermont's economic stability. This component includes actions that support businesses and working lands enterprises in adapting to changing climate conditions.



Opportunities and Actions

Opportunity 9: Support Vermont businesses, especially small and underserved businesses, in building capacity to prepare for, respond to, and recover from climate-driven disasters, while also advancing economic diversification and adoption of climate-resilient business practices.

Build capacity to prepare for, respond to, and recover from climate-driven disasters.

- Farm and Forestry Security Special Fund
- Logging efficiency
- Business Emergency Gap Assistance Program (BEGAP)
- Climate Outdoors Workforce Initiative - Climate Resilience Jobs
- Business Climate Change Needs Assessment
- 5 Year Resilient Workforce Development Plan
- Peer Learning Networks focused on Climate Adaptation
- Business technical resources and tools

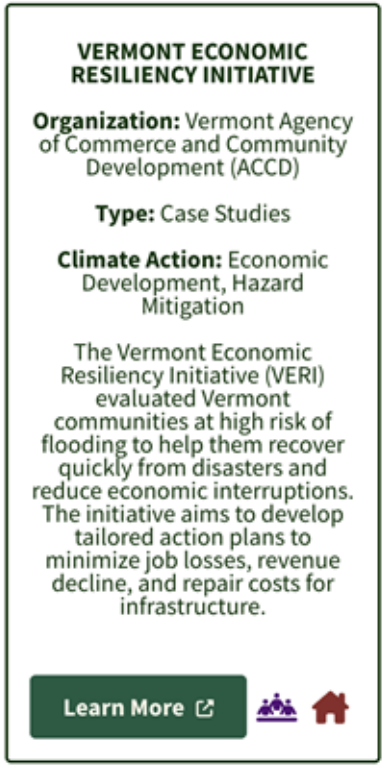
Vermont's Climate Toolkit

Vermont's one-stop, searchable local and regional climate planning hub!

https://climatechange.vermont.gov/climate-toolkit



Example from the Vermont Climate Toolkit



➔ Vermont Economic Resiliency Initiative (VERI)

Tool Types:

- ➔ Case Studies
- ➔ Data
- ➔ Education/Outreach
- ➔ Financial
- ➔ Planning
- ➔ Technical Assistance

Tools for Business:

- Floodproofing for Businesses
- Case Studies
- Dealing with Debris 101
- Reducing Disaster Debris
- Green Infrastructure 101
- Green Landscaping
- River Corridor Protection
- Preparation Matters to Business
- Business Continuity Planning
- Disaster Preparation for Farms
- Insurance Checklists for Business

Example from the Vermont Climate Toolkit



Disaster Recovery Loan Fund

- The VEDA Disaster Recovery Loan Fund provides financial assistance to Vermont businesses, farms, foresters, and not-for-profit organizations to help them recover from damage caused by disasters by repairing or replacing damaged property, inventory, or working capital.

Eligible Disasters

- A disaster must be declared for the Disaster Recovery Loan Fund to be activated. That happens one of two ways. A disaster must be:
- declared by the Governor of Vermont or President of the United States, or
- declared by VEDA in consultation with the Vermont Secretary of Commerce and Community Development; Vermont Secretary of Agriculture, Farms, and Markets; and the Vermont Commissioner of Forests, Parks, and Recreation.

Example from the Vermont Climate Toolkit



Business continuity planning can be defined as “planning to ensure the continued availability of essential services, programs, and operations; including all the resources involved.” Business continuity planning prepares an organization to respond to an interruption of essential business functions and provides the guidelines to fully recover operations, services, and programs.

- Vermont Business Preparedness Workbook
- Vermont Flood Resiliency Planning Resources
- FEMA Business Preparedness Sample Business Continuity Plan

Estimating Your Risk

Probability & Matrices

From Hazard Exposure to Risk

Risk equals likelihood plus consequence.

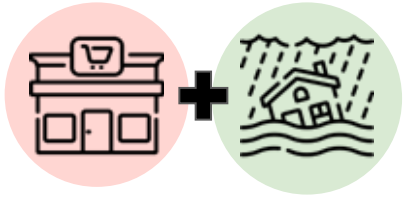
Estimating risk can sound technical, but it comes down to two simple questions:

1. **How likely is something to happen?**
2. **How big of a problem would it be if it did?**

It's not just about how bad something could be - it's also about how probable it is.

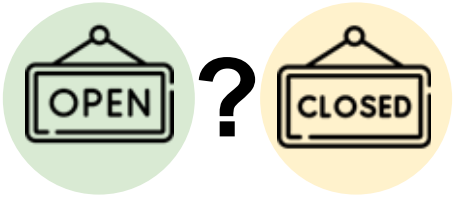
The next few slides walk you through that intersection - pairing your asset-hazard data with operational realities.

From Hazard Exposure to Risk



Asset-Hazard Pairing

Pair each of your priority assets with **climate-related hazard(s)** that are likely to affect it



Consequence

Understand whether and how you can operate after being impacted by a **climate-related hazard**

From Hazard Exposure to Risk



Likelihood of a Hazard Event

×



Consequence for Business Continuity

=

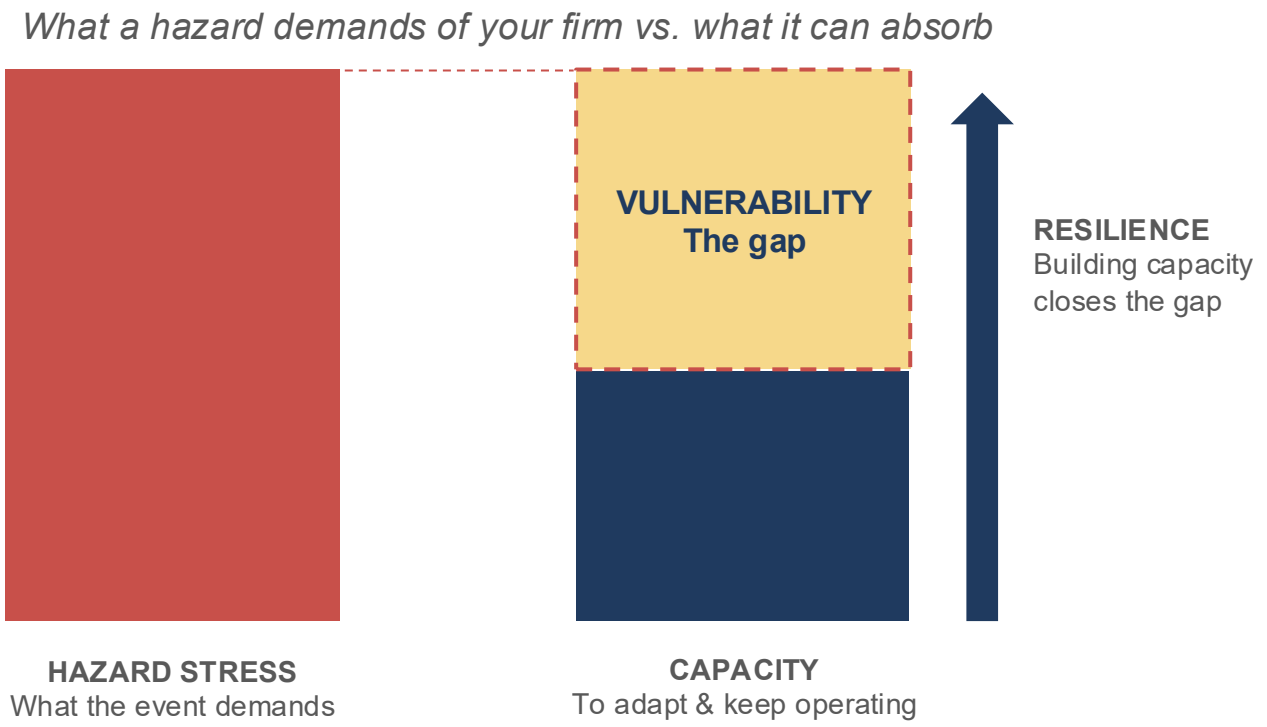
Risk

***Possibility** of Climate Hazard Impact on Business*

- This diagram shows how we combine probability and consequence to define overall risk.
- For example, a flood that's rare but would shut you down completely may still rank as a higher risk than a heat wave that's frequent but manageable.
- Our challenge is balancing both - what's most likely and what would hurt most.

Vulnerability Is the Gap

Vulnerability is the gap between the hazard and your ability to adapt or continue operating. Think about where your systems are fragile - where one failure could cascade.



Two Ways to Estimate Risk: Qualitative vs Quantitative

Qualitative

Simple | Fast Understandable

Less Precise

- Experience & informed judgment
- Words/categories (low, high)
- Team discussion, observations, & expert insight
- Data is limited or incomplete

Quantitative

Precise Detail-focused

Takes More Data, Time, & Expertise

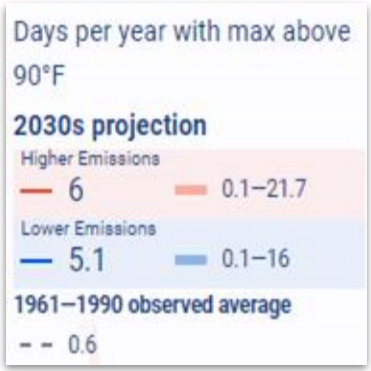
- Numbers & data
- Actual figures (% chance, $ impact)
- Data, calculations, & sometimes software
- High-stakes or financial planning

Identifying Potential Climate Hazard Exposure

- Let's return to identifying hazard exposures, using both Climate Explorer and FEMA's Risk Index.
- Use these tools to confirm — or challenge — what you already believe about your location.
- This combination of data and lived experience is what makes your plan both credible and actionable.

Temp Changes in My Business Location

From Climate Explorer website



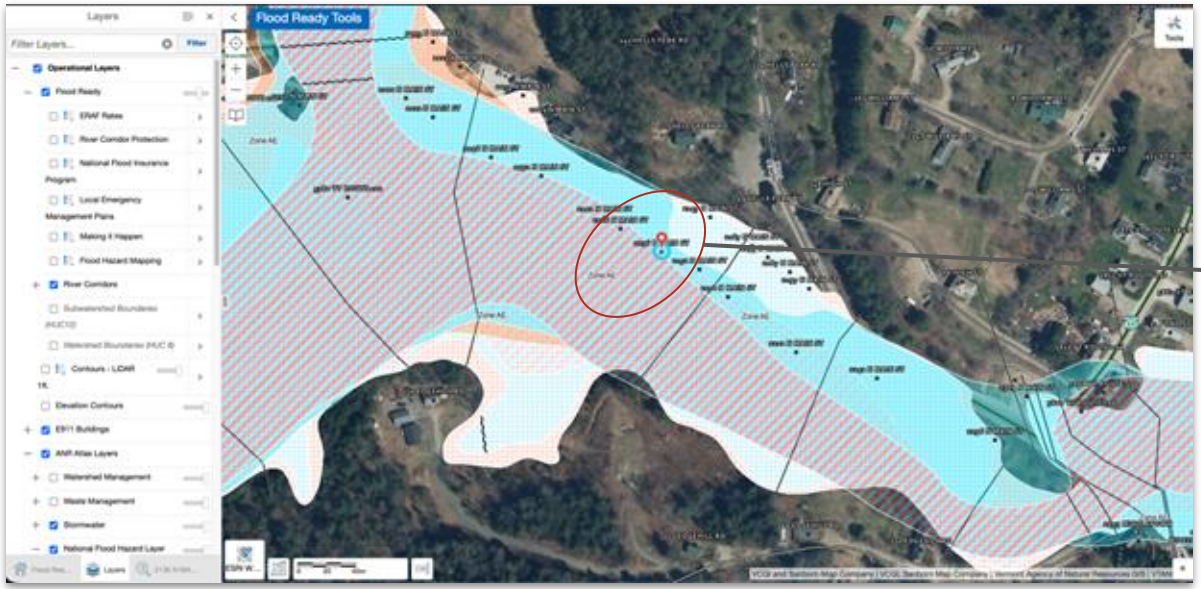
Potential Hazard Exposure

Extreme Heat

Identifying Potential Climate Hazard Exposure

As an example, here we've entered the address for our fictional business *Pete's Pick & Pack* in Londonderry.

From Flood Ready VT website



Potential Hazard Exposure

River Flooding?

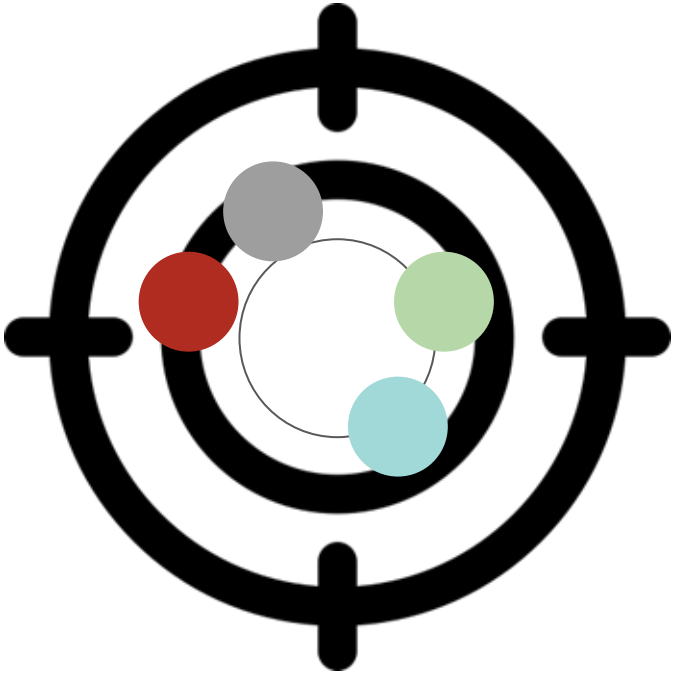
Identifying Potential Climate Hazard Exposure

These datasets may not reflect the very latest local conditions, but they help us to **start asking the right questions.**
For example:

- Are we located in an area with higher modeled flood exposure?
- Are there nearby infrastructure or access vulnerabilities?
- Are there social or economic factors that might affect workforce or customer resilience?

Think of these databases as **risk conversation tools** that help you move from a general sense of uncertainty to a clearer picture of where to focus attention.

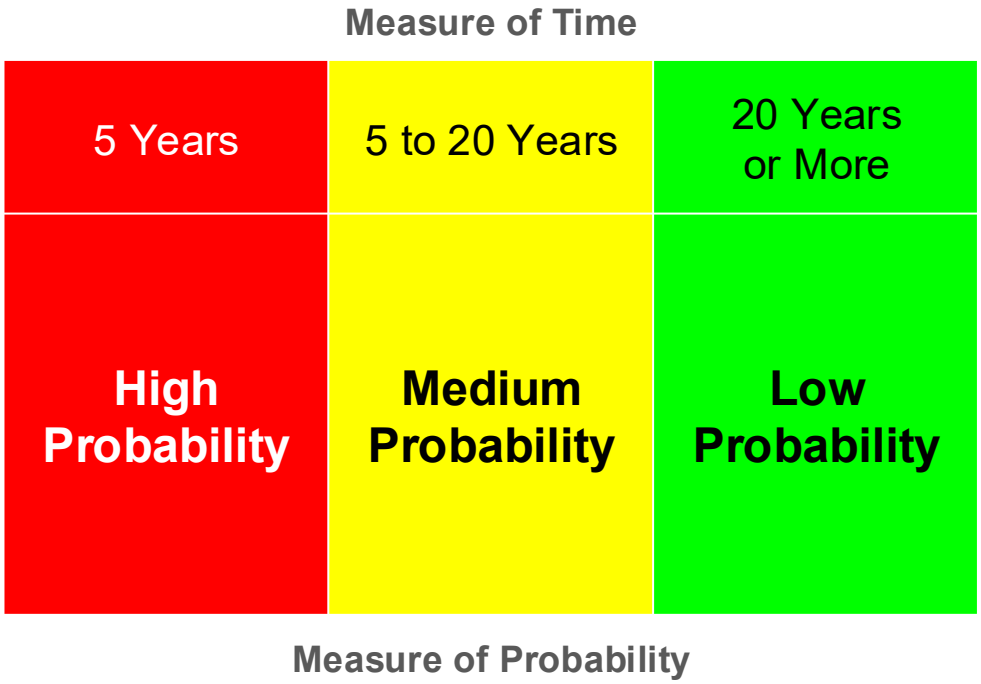
Truths About Risk Assessment



- ➔ Estimating hazard risk is <u>not</u> an exact science. Even experts debate projections and probabilities - so don't get hung up on perfection.
- ➔ The goal is consistency, not precision - apply the same lens to all hazards so you can compare them fairly.

Measuring Probability

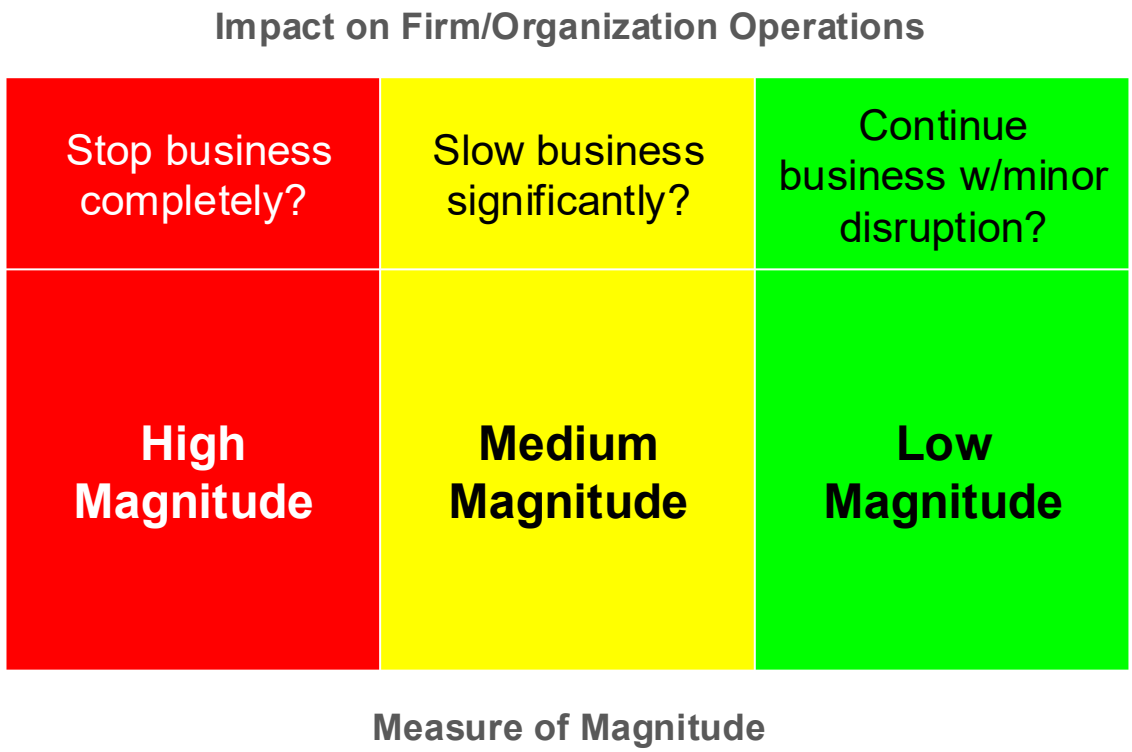
➔ **Probability** = the likelihood of a hazard occurring



Measuring Magnitude

Would it shut you down completely, cause a slowdown, or just be a minor hiccup?

➔ **Magnitude** = severity of impact on your firm/ organization if the hazard occurs

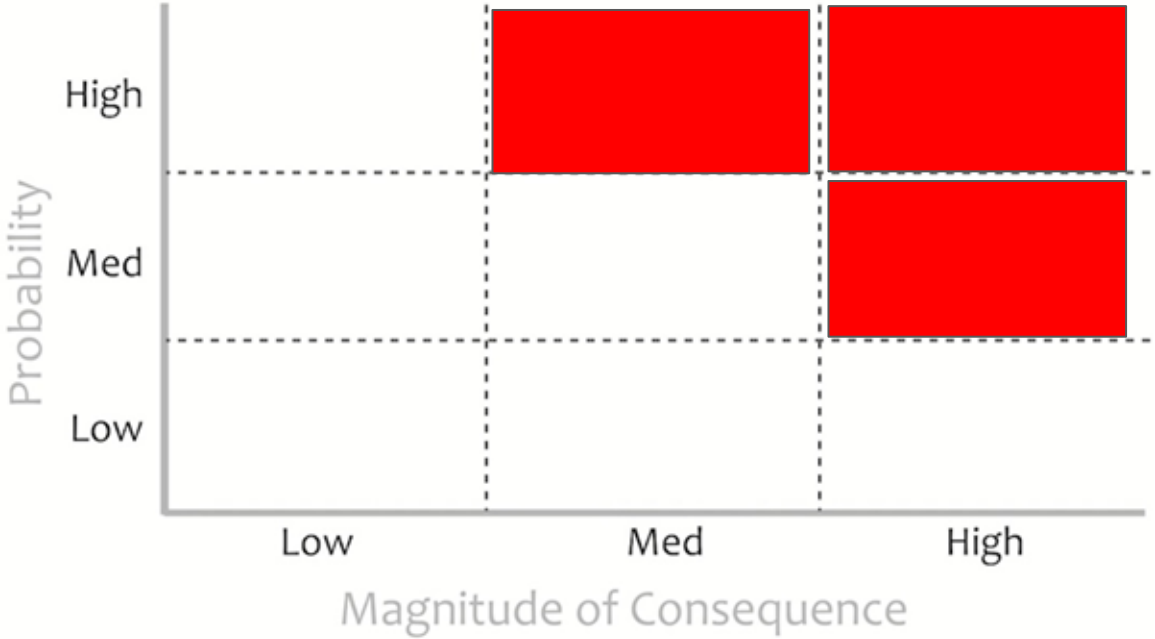


Risk Matrix

Combining **magnitude** and **probability** gives you a visual risk profile.

Plot your asset-hazard pairs on the grid in your workbook.

This is where your priority investments start to reveal themselves - high-risk assets deserve attention first.



Let’s use Pete’s Pick & Pack as an example:



Step 1: Create Asset-Hazard Pairs

Asset-Hazard Pairs
Inventory Storage Room - Flooding
Inventory Storage Room - Extreme Storms
Staff - Extreme Heat
Staff - Extreme Storms
Electric, etc. Utilities - Extreme Storms
Electric, etc. Utilities - Flooding

Step 2: Complete the Asset Exposure Table

Probability Measurement

5 Years	5 to 20 Years	20 Years or More
High Probability	**Medium Probability**	**Low Probability**

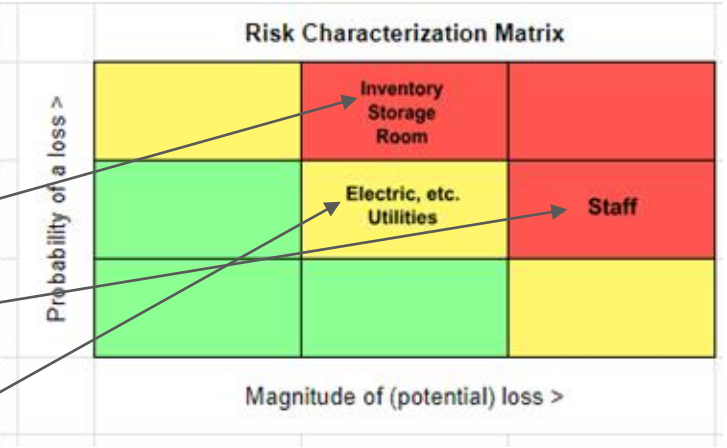
Magnitude Measurement

Stop completely?	Slow significantly?	Continue w/minor disruption?
High Magnitude	**Medium Magnitude**	**Low Magnitude**

Most Vulnerable Priority Assets	Probability of a Loss (high, med, low)	Magnitude of the Loss (high, med, low)
Inventory Storage Room	High	Medium
Staff	Medium	High
Electric, etc. Utilities	Medium	Medium

Step 3: Plot on the Risk Matrix

Most Vulnerable Priority Assets	Probability of a Loss (high, med, low)	Magnitude of the Loss (high, med, low)
Inventory Storage Room	High	Medium
Staff	Medium	High
Electric, etc. Utilities	Medium	Medium



- Assets with both **high probability of a loss and high magnitude (impact)**, like the inventory storage room, fall in the red zone—meaning they are at the greatest risk.
- Lower-risk items, like utilities in this case, appear in yellow or green.



Let’s practice!

Choose one of the business scenarios from the next few slides, then follow the steps to practice!

Example Business Scenarios

Supper Den

LLC Partnership

Restaurant

1. Older main-street restaurant in a dense downtown block near the river
2. Village center restaurant near the lake in a seasonal tourism area

Location 1:
Greensboro
Leased building
1 story
15 employees

Location 2:
Windsor
Leased building
1 story
10 employees

Assets:
Employees
Point of Sale
Kitchen equipment
Cold storage
Dry storage
Dining tables and chairs
Papergoods
Plates, cups, silverware
Cleaning equipment

APlus Accounts

3 Partners

Professional Accounting Firm

6 room office on second story of historical building

St. Johnbury
Leased office space in multi-tenant buildling
30 employees

Assets:
Employees
Computers
Office furniture
Bookshelves
Tables
Artwork
Copy machine

Example Business Scenarios



Ben's Books

2 owners
Small Biz Loan

Retail

1. Historic downtown storefront near the river with basement storage
2. One-story retail building along a state highway on slightly higher ground

Location 1:
White River Junction
Leased building
2 levels (includes basement)
5 employees

Location 2:
Morrisville
Owned building
1 level
3 employees

Assets:
Employees
Inventory
Computers
Office furniture
Bookshelves
Tables
Racks
Artwork
Lighting



ArtPart

Family Biz
No debt
Considering expansion

Light Manufacturing of Specialized Paint Brushes

Small warehouse/manufacturing site on flat land in a river valley

Johnson
Own 2 buildings
- 1 office, 1 story
- 1 warehouse/manufacturing facility

15 employees: 10 FT, 5 PT

Assets:
Employees
Computers
Office furniture
Bookshelves
Raw materials
Inventory ready for sale
Shipping materials
Drills, sanders
Pickup truck

Example Business Scenarios

Hillside B&B

Family Business

Bed and Breakfast

Rural hilltop inn at the end of a long private driveway surrounded by woods

Peacham
Restored house on 10 acres
Owned
4 employees FT
2 employees PT

Assets:
Employees
Computers
Furniture
Bedding
Papergoods
Kitchen equipment
Dining Tables and chairs
Gardening and landscaping tools

The Smith

50 year old Non-Profit with endowment

Art Museum

Standalone historic buildling with parking lot in downtown

Newport
10 employees FT
Volunteers

Assets:
Employees
Computers
Office furniture
Chairs, tables, benches
Fine art and crafts
Display cases
LED screens
AV equipment

Let's practice!

Using your chosen business scenario, **start researching the business location** to identify a hazard exposure using one of these tools:

https://crt-climate-explorer.nemac.org/ (The Climate Explorer)

https://bit.ly/40woVQz (FEMA Resilience Analysis and Planning Tool)

Identify up to three of the business' highest priority assets. They may or may not be on the card. Add them to the Asset Exposure Table in your workbook.

Most vulnerable priority assets	Probability of a Loss Low/Medium/High	Magnitude of the Loss Low/Medium/High
1. Type here		

Let's practice!

Rank probability of Loss for each asset on your Asset Exposure Table. How likely is each asset to be impacted by a climate disruption?

Indicate magnitude for each asset on your Asset Exposure Table. If impacted, how big of an effect will it have on the business operations?

Most vulnerable priority assets	Probability of a Loss Low/Medium/High	Magnitude of the Loss Low/Medium/High
1. Type here		

Let’s practice!

Plot your asset/hazard pairs on the Risk Characterization Matrix to visualize vulnerabilities.

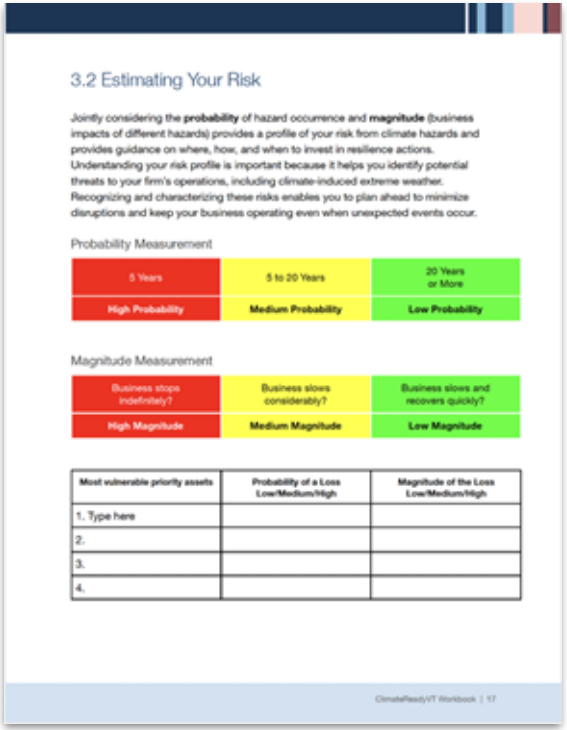
Consider the following:

- What hazards should this business focus on?
- What assets are critical to continuity of operations that they might need to focus on protecting?

	Low Magnitude	Medium Magnitude	High Magnitude
High Probability			
Medium Probability			
Low Probability			

Try it Yourself in the Workbook!

Module 3



3.2 Estimating Your Risk

Jointly considering the **probability** of hazard occurrence and **magnitude** (business impacts of different hazards) provides a profile of your risk from climate hazards and provides guidance on where, how, and when to invest in resilience actions. Understanding your risk profile is important because it helps you identify potential threats to your firm's operations, including climate-induced extreme weather. Recognizing and characterizing these risks enables you to plan ahead to minimize disruptions and keep your business operating even when unexpected events occur.

Probability Measurement

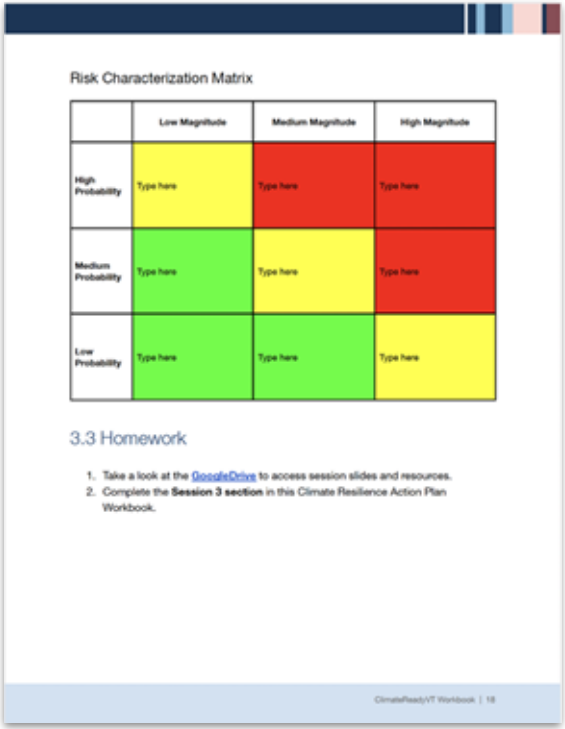
5 Years	5 to 20 Years	20 Years or More
High Probability	**Medium Probability**	**Low Probability**

Magnitude Measurement

Business stops indefinitely?	Business slows considerably?	Business slows and recovers quickly?
High Magnitude	**Medium Magnitude**	**Low Magnitude**

Most vulnerable priority assets	Probability of a Loss Low/Medium/High	Magnitude of the Loss Low/Medium/High
1. Type here		
2.		
3.		
4.		

ClimateReadyVT Workbook | 17



Risk Characterization Matrix

	Low Magnitude	Medium Magnitude	High Magnitude
High Probability	Type here	Type here	Type here
Medium Probability	Type here	Type here	Type here
Low Probability	Type here	Type here	Type here

3.3 Homework

1. Take a look at the GoogleDrive to access session slides and resources.
2. Complete the **Session 3 section** in this Climate Resilience Action Plan Workbook.

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A spreadsheet version is also available here!

Turning Risks into Actions

Bridging the Gap: This is the shift from analysis to doing - where resilience becomes operational.

Climate Resilience Action Plan Steps



0

Asset Inventory

List the assets that can contribute to your financial well-being or the success of your business.

1

Understand Exposure

Evaluate business assets and their exposure to climate-related hazards.

2

Assess Vulnerability and Risk

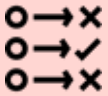
Identify the business assets most vulnerable and at-risk to climate-related hazards.



3

Investigate Options

List strategies to reduce the greatest climate-related risks to vulnerable assets.



4

Prioritize and Plan

Design an implementation plan for the strategies that are most likely to reduce vulnerability and risk.

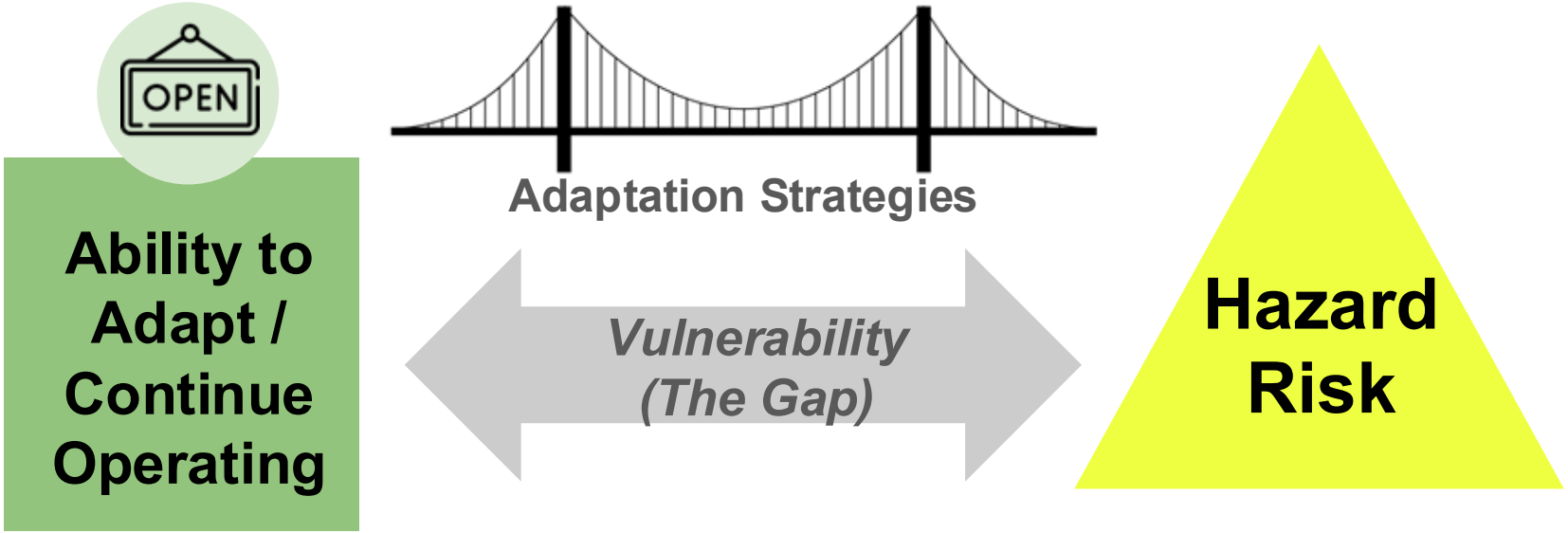
5

Take Action

Implement and communicate the plan with employees (if applicable). Monitor. Iterate.

How Do You Bridge the Gap?

The gap between hazard and resilience is vulnerability — and the bridge is adaptation. Every step - even a small one - helps close that gap.



Tailoring Risk Estimates for Your Unique Situation

There's no one-size-fits-all resilience plan.



Customize Timeframes

Do your probability timelines reflect the actual frequency of severe weather in your location?



Consider Your Unique Business Assets

How are your different priority assets each vulnerable to different types of hazards?



Account for Building and Location Factors

What are your unique structural and location risks, like proximity to flood-prone areas or a high-wind zone?



Evaluate Past Impacts

How have prior severe weather events affected your business? How would you characterize your business resilience in those instances?

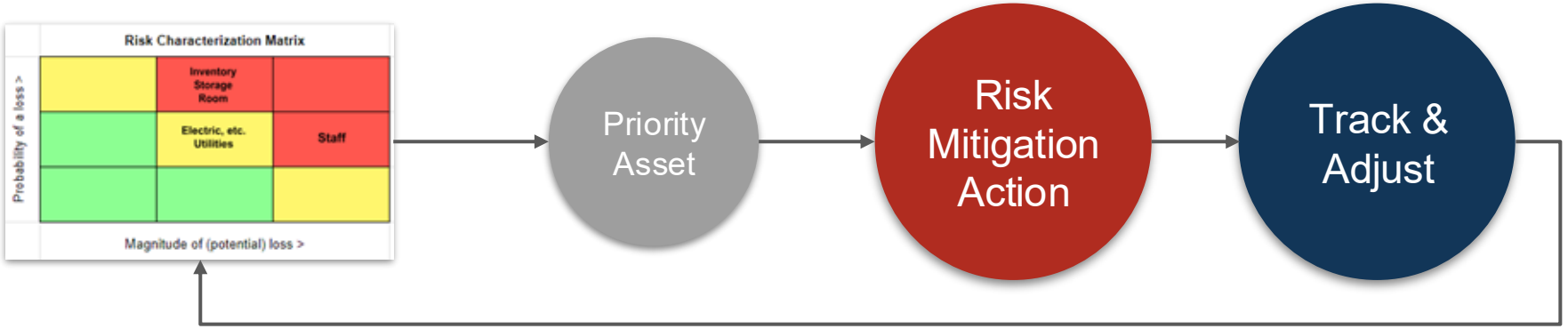


Update Based on Business Changes

If your operations or assets change, will you revisit and update your hazard probability timeline estimates to remain reliable?

Shifting from Analysis to Action

Remember, resilience is iterative - it's about continuous improvement.



Resilience Check-ins

Risk Mitigation Action – What Could That Look Like?

You don't have to do it all! Choose what's achievable and high-impact.
Think of this as your "menu" of possible resilience investments.

Technology Investments
Backup power systems, water sensors, data redundancy/cloud storage





Infrastructure Upgrades
Elevate utilities, install flood barriers, reinforce storage areas

Staff Preparedness
Training, safety protocols, cross-training for critical functions







Operational Changes
Diversify suppliers, update emergency procedures, shift to remote-capable operations

Partnerships & Resources
Mutual aid agreements, collaboration with municipalities, grant funding

Track and Adjust

Track your metrics, measure your progress, and adjust as conditions evolve.

Baseline & Targets
Set clear resilience indicators (e.g., downtime, cost avoided, service continuity)

Performance Metrics
Track key measures like staff readiness scores, emergency response times, reduced insurance claims

Regular Resilience Check-ins
Schedule quarterly or annual reviews of action effectiveness

Continuous Improvement
Update the risk matrix to reflect changing climate risks and business conditions

Feedback Loops
Gather staff and community input, adjust actions based on lessons learned

Creating a Climate Resilience Action Plan

Climate Resilience Action Plan Components

Here's what your Climate Resilience Action Plan will include:

- Assets
- Priority level
- Action
- Cost
- Timing
- Supportive resources

Your completed plan should be simple but powerful and ready to share with funders, boards, or staff so that they understand your priorities clearly.

Example



A	B	C
Priority Level	**Asset to be Adapted/Strengthened**	**Action/Investment**
High	Inventory Storage Room	Build new flood-resistant inventory room in upper level of current building
Medium	Utilities	Install backup generator(s) adequate to run facility for 48 hours

D	E	F
Estimated Cost	**Timing**	**Resources for Support**
$250,000	End of Next FY	VtSBDC, Small Biz Grants, VBSR Peer Council
$20,000	End of Current FY	GMP, VtSBDC

Key Questions to Consider

When should I implement an action or make an investment? Are there dependencies to consider?

	A	B	C	D	E	F
1	Priority Level	Asset to be Adapted/Strengthened	Action/Investment	Estimated Cost	Timing	Resources for Support
2	High	Inventory Storage Room	Build new flood-resistant inventory room in upper level of current building	$250,000	End of Next FY	VtSBDC, Small Biz Grants, VBSR Peer Council
3	Medium	Utilities	Install backup generator(s) adequate to run facility for 48 hours	$20,000	End of Current FY	GMP, VtSBDC
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

Is an action actually a series of steps? Is there an optimal sequence that maximizes my resiliency?

What resources are available to help me plan and pay?