

**KEEP
SAFE
MIAMI**

Portfolio Protect User Guide



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1 Introduction

1.1 Scope and Purpose

Keep Safe Miami is a program developed by Enterprise Community Partners and the City of Miami, to equip affordable multifamily housing owners and operators, and residents with tools to assess their buildings' resilience to climate change and natural disasters and provide them with actionable strategies and guidance on financing to address these vulnerabilities.

For owners of affordable multifamily housing properties, whether it is one or multiple properties, building damage can undermine the financial health and integrity of a portfolio. Any resulting property loss or extensive repairs can significantly impact the ability of residents to have a safe and healthy home, and lead to displacement of families and economic distress across entire communities.

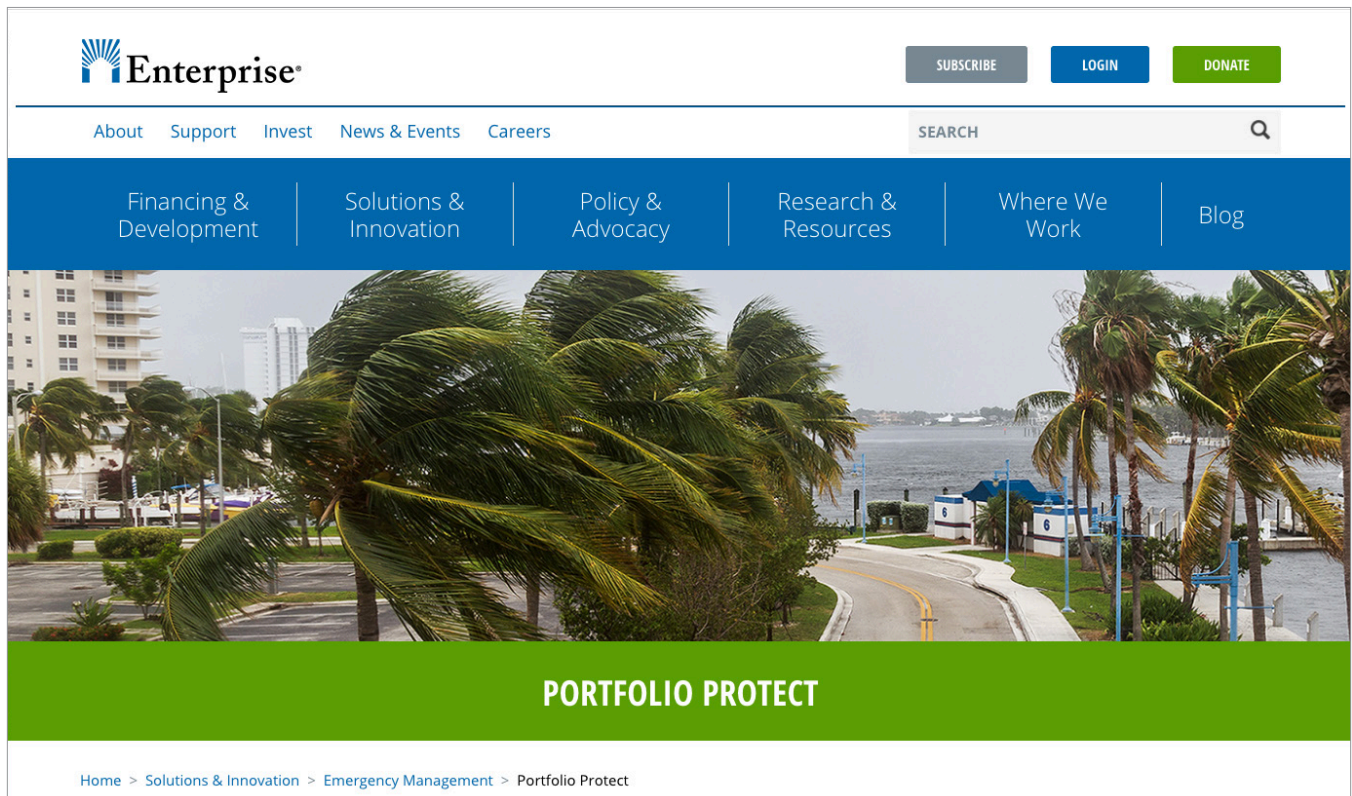


Extreme Heat and Wind

Hazards associated with high winds in the United States extend throughout the Gulf and Atlantic Coasts with varying degrees of severity and varying inland distances from the coastline. Please note that all properties in Miami face hazards from extreme wind events. The National Oceanic and Atmospheric Administration (NOAA) categorizes the region's wind hazard as "major," and Florida defines Miami/Dade and Broward Counties as the High Velocity Hurricane Zone (HVHZ). The State's building code has the strongest wind mitigation provisions in the continental US. Please also note that all residents of Miami face extreme heat hazards, the highest in the Center for Disease Control's range. While Miami can be hot and humid year-round, sickness and death caused by extreme heat is preventable with both building and behavior measures.

1.2 Process Overview

The Enterprise Portfolio Protectsm Tool was developed by Enterprise to help owners, operators and developers of affordable housing understand which of their properties are at highest risk from flooding, fire, earthquakes and other natural hazards in their local community. This tool offers users the ability to identify highest risk properties and offers recommendations and resources to help minimize potential harm to your property or properties and keep residents' homes safe.



The Keep Safe Miami building assessment process includes three fundamental steps:

1. ***Assess Your Risk:** Use the online portfolio tool (**Enterprise Portfolio Protectsm**) to provide an initial analysis of the risks associated with specific properties in a specific portfolio of buildings.
2. **Identify Buildings with the Greatest Need:** Review the outputs of the Portfolio Tool to focus your resources on the buildings that are identified as most at-risk.
3. **Use the Building Protect Tool** – Use the Building Protect tool to conduct an evaluation of specific details of a property and identify resilience strategies at the building level through the site assessment.

Resources such as the **Funding Resources Guide** are available to help identify and secure capital to implement identified relevant resilience strategies.

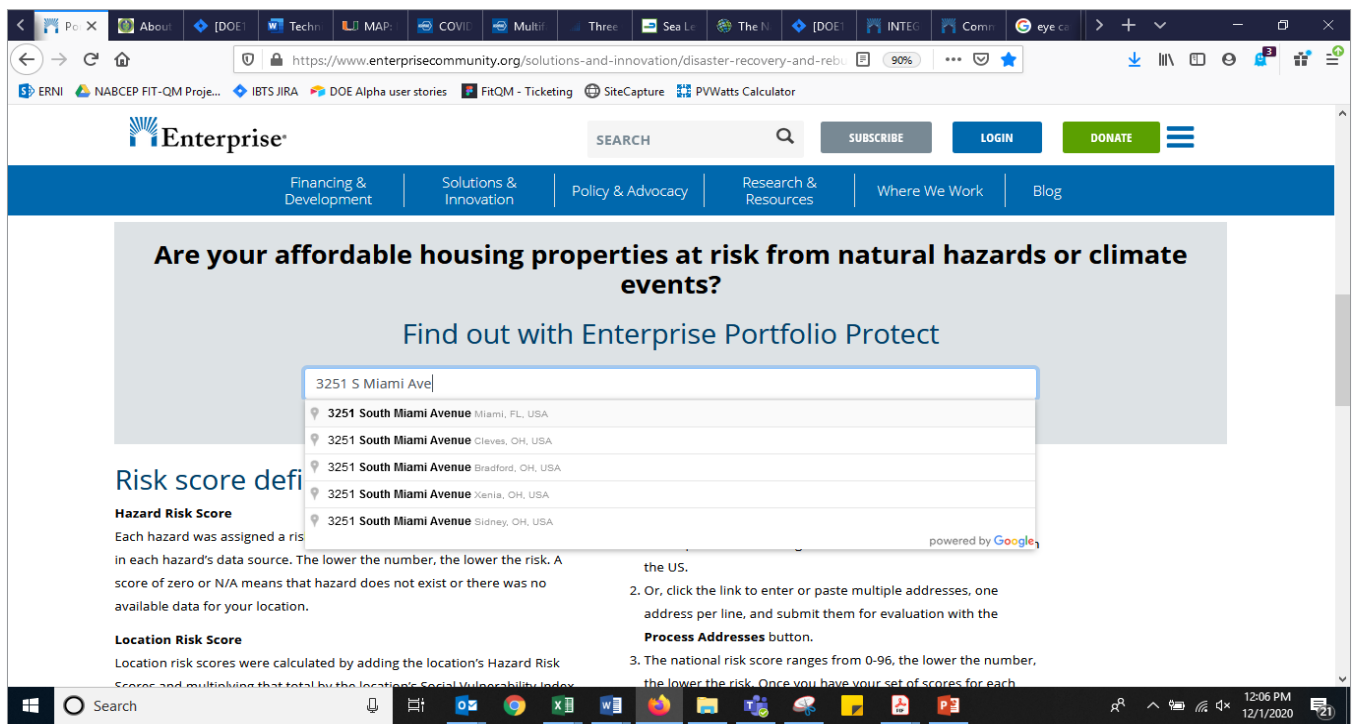


2 Using the Enterprise Portfolio Protect Tool

The [Enterprise Portfolio Protectsm Tool](#) takes the building address and compares it with data from the Center for Disease Control (CDC), Federal Emergency Management Agency (FEMA), National Oceanic and Atmospheric Administration (NOAA), and additional resources¹ to provide an overview of the existing risks associated with that specific location. The search provides a visual display of risk and associated resources to assist in the evaluation of the property and provide immediate recommendations to consider. The tool can process a single address or multiple addresses at once for a quick and detailed comparison of a portfolio; both approaches provide the same level of risk detail.

2.1 Assess a Single Address

1. Enter your building address into the search bar and select the appropriate location that populates in the drop-down box.



¹ The full list of data sources can be found in Appendix A

- Once the address is selected from the drop-down box the results are displayed on the page automatically. You will see a Risk Score pop up that falls within a range of 0-96.

Are your affordable housing properties at risk from natural hazards or climate events?

Find out with Enterprise Portfolio Protect

3251 South Miami Avenue, Miami, FL, USA

[Or enter multiple addresses by clicking here](#) >

[Download full resources guide](#)

Locations				RETRY ALL FAILED	REMOVE ALL
<input type="checkbox"/>	Action	Address	Risk Score	Range for USA	
<input type="checkbox"/>	VIEW RESULTS	3251 S Miami Ave, Miami, FL 33129, USA	30	<div><div></div></div>	0 - 96

- Select the blue “View Results” bar for detailed information about specific hazards related to the property’s location. You will be able to review the property’s overall risk score as well as individual hazard results.

<input type="checkbox"/>	Action	Address	Risk Score	Range for USA
<input type="checkbox"/>	HIDE RESULTS	3251 S Miami Ave, Miami, FL 33129, USA	30	<div><div></div></div> 0 - 96

3251 S Miami Ave, Miami, FL 33129, USA

Total Risk

Total Risk Score: 30

We have calculated your risk score by multiplying your Social Vulnerability risk level by all your hazards.

- Risk score range for USA is 0 - 96

Map Satellite

3251 S Miami Ave
3251 S Miami Ave, Miami, FL 33129, USA
Location Total Risk: 30 - Range: 0 - 96

Vizcaya Museum & Gardens
Art, antiques & gardens
on Biscayne Bay

Map data ©2020 Google Terms of Use Report a map error

Social Vulnerability Index


Social Vulnerability (SVI) Risk Level: 2

Hazards

Earthquake Risk Level: 1	<div><div></div></div>
Flooding Risk Level: 4	<div><div></div></div>
Landslide Risk Level: 1	<div><div></div></div>
Sea Level Rise Risk Level: 5	<div><div></div></div>
Tornado Risk Level: 3	<div><div></div></div>
Tsunami Risk Level: N/A	<div><div></div></div>
Wildfire Risk Level: 1	<div><div></div></div>

4. Select an individual hazard to learn more about the risk including information about the score, recommendations, links to additional information, and data sources.

Flooding Risk Level: 4



Description of risk

Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.

- It has been identified that your location is in or near a **high** risk zone (FEMA Zone A) for flooding. Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage.
 - You are required to have [flood insurance](#)
- Risk range for this hazard in USA is 0 - 5

Recommendations

- Have you elevated or flood proofed critical infrastructure such as HVAC?
- Anchor any fuel tanks on the property.
- Learn and practice evacuation routes, shelter plans and flash flood response.
- Consider flood proofing your building.
- Consider elevating or abandoning your lowest interior floor.

Each hazard was assigned a risk score based on internal categories found in each hazard's data source. The lower the number, the lower the risk. A score of zero or N/A means that hazard does not exist or there was no available data for your location. Location risk scores were calculated by adding the location's Hazard Risk Scores and multiplying that total by the location's Social Vulnerability Index score, which assesses a community's ability to prepare for and respond to hazardous events. This formula emphasizes an area's vulnerability, based on likelihood of a hazard occurring and the location's ability to respond.

2.2 Assess a Portfolio—Comparing Multiple Addresses

Portfolio Protect allows user to compare multiple properties at once to assess which ones may be at a higher risk than others. This comparison is important for managers to prioritize improvements based on overall risk as well as hazard specific concerns. Detailed building assessments can be implemented and prioritized based on this review.

1. Begin by selecting “Or enter multiple addresses by clicking here” under the search bar. A text box will expand allowing multiple entries.

The screenshot shows the top section of the Enterprise Portfolio Protect interface. At the top, it asks "Are your affordable housing properties at risk from natural hazards or climate events?" and "Find out with Enterprise Portfolio Protect". Below this is a search bar with the placeholder text "Look up an address by entering it here". Below the search bar is a link "Or enter multiple addresses by clicking here" with a dropdown arrow. This link is highlighted with a red box, and the text box below it is also highlighted with a red box. The text box contains the placeholder text "Enter or paste addresses, one per line".

2. Type in or copy and paste the addresses you would like to compare into the box. Once an address has been entered press enter to get to the next line.

NOTE: Be sure to input each address on its own line or the tool will only be able to locate the first property

- a. Include the street address, city, and state at a minimum.
- b. Once all addresses have been entered, select “Process Addresses” at the bottom of the text box.

The screenshot shows the same interface as the previous one, but with several addresses entered into the text box. The addresses are: 117 SW 10 street Miami FL, 174 E Flager St Miami FL, 2235 SW 8th St. Miami FL, 720 SW 63 Ave. Miami FL, 7831 NE 79th st. Miami FL, 7925 NW 7th Ave Miami FL, 528 NW 8 St., 539 NW 7 Miami FL, and 1600 NW 14 St. Miami FL. At the bottom of the text box is a blue button labeled "PROCESS ADDRESSES".

- c. Give the tool a moment to process and display the data for the addresses. The progress can be monitored by reviewing the status bars to the left of the addresses.

<input type="checkbox"/>	VIEW RESULTS	2235 SW 8th St, Miami, FL 3
<input type="checkbox"/>	PROCESSING	720 SW 63rd Ave, Miami, FL
<input type="checkbox"/>	QUEUED	NE 79th St, Miami, FL, USA
<input type="checkbox"/>	QUEUED	7925 NW 7th Ave, Miami, FL

3. Once the tool has processed the addresses, they will be displayed on the screen for review.

<input type="checkbox"/>	Action	Address	Risk Score		Range for USA
<input type="checkbox"/>	VIEW RESULTS	117 SW 10th St, Miami, FL 33130, USA	33	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	174 E Flagler St, Miami, FL 33131, USA	21	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	2235 SW 8th St, Miami, FL 33135, USA	24	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	720 SW 63rd Ave, Miami, FL 33144, USA	32	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	NE 79th St, Miami, FL, USA	56	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	7925 NW 7th Ave, Miami, FL 33150, USA	28	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	539 NW 7th Ave, Miami, FL 33034, USA	72	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	1600 NW 14th St, Miami, FL 33125, USA	56	<div><div></div></div>	0 - 96

2.3 Reviewing the Results—Assess the Risks

Addresses are assigned a Total Risk Score by multiplying the Social Vulnerability risk level by the scores of the individual hazards. The higher the number, the greater the risk associated with that property.

Selecting “View Results” for an address will display detailed information regarding the scores for each hazard section, the individual hazard details, and provide information about recommendations and data sources.

2.4 Prioritizing Buildings in a Portfolio

Running multiple address at once allows the user to identify quickly which properties in their portfolio may require more immediate attention. In the example below, the address with the red status bar is the most at-risk out of the addresses provided. With an overall risk score of 72, this may be the property to review first.

<input type="checkbox"/>	Action	Address	Risk Score		Range for USA
<input type="checkbox"/>	VIEW RESULTS	117 SW 10th St, Miami, FL 33130, USA	33	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	174 E Flagler St, Miami, FL 33131, USA	21	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	2235 SW 8th St, Miami, FL 33135, USA	24	<div><div></div></div>	0 - 96
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<input type="checkbox"/>	VIEW RESULTS	539 NW 7th Ave, Miami, FL 33034, USA	72	<div><div></div></div>	0 - 96
<input type="checkbox"/>	VIEW RESULTS	1600 NW 14th St, Miami, FL 33125, USA	56	<div><div></div></div>	0 - 96

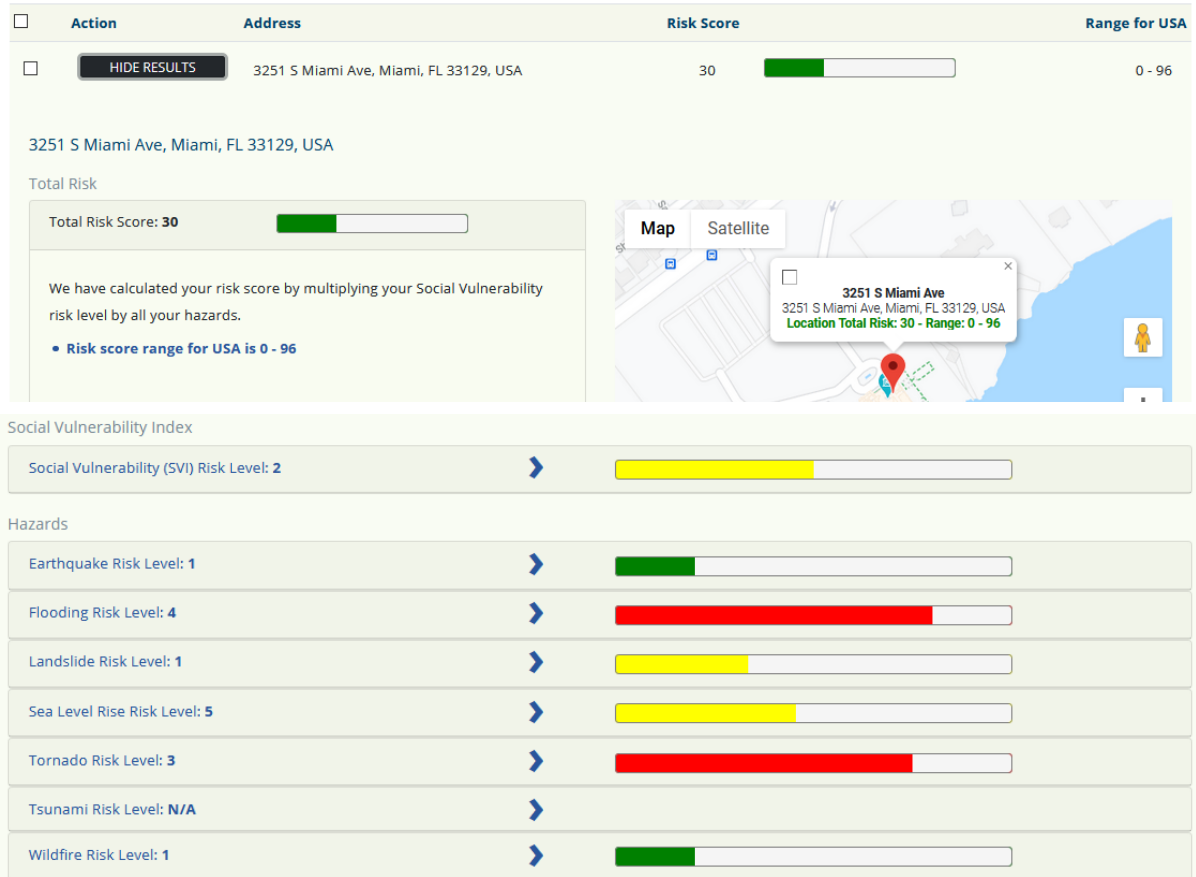
It is important to review the individual results from all addresses regardless of the overall risk scores as each property will have its unique needs and individual risks and should not overlooked due to a lower score than others. This method provides opportunity to prioritize they data and potential building level assessments.

Reviewing the results of individual properties is identical when searching one address, or multiple addresses:

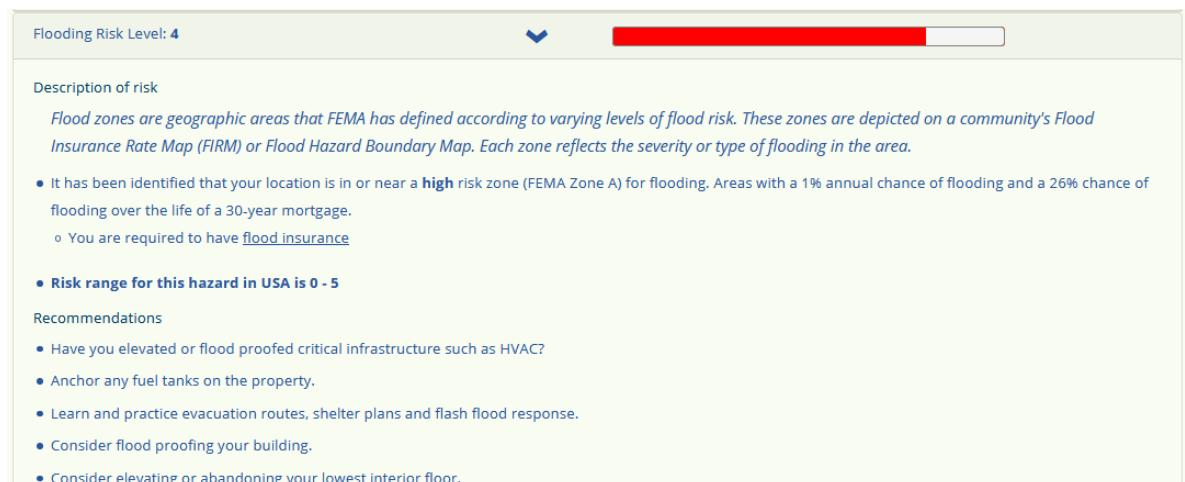
1. Select the blue “View Results” bar for detailed information about specific hazards related to the property.

<input type="checkbox"/>	Action	Address	Risk Score		Range for USA
<input type="checkbox"/>	VIEW RESULTS	3251 S Miami Ave, Miami, FL 33129, USA	30	<div><div></div></div>	0 - 96

- You will be able to review the property's overall risk score as well individual hazard results.



- Select an individual hazard to learn more about the risk including information about the score, recommendations, links to additional information, and data sources.












2.5 Next Steps and Resources

Once you have completed the initial review of your buildings, use the Building Protect Assessment Tool that has been designed as a questionnaire to walk you through your buildings and provide detailed steps you can take to make your properties safer and more resilient. Additional resources and information can be found in the appendices as well as throughout the **Enterprise Portfolio Protectsm** webpage.

For additional help with the Enterprise Portfolio Protectsm please contact keepsafe@enterprisecommunity.org.

3 Hazard Descriptions and Data Sources

Hazard	Definition	Data Source	Resources to Reduce Risk
Social Vulnerability (SVI) Risk Level 	The CDC defines social vulnerability as the resilience of communities when confronted by external stresses on human health, stresses such as natural or human-caused disasters, or disease outbreaks. This section was determined by using data from the CDC Social Vulnerability Index .	CDCs Social Vulnerability Index	US Climate Risk Toolkit Social Vulnerability Enterprise Made to Last: A Field Guide to Community Resilience, Vol 1 Best Practices in Community Mitigation Planning-UNC
Earthquake Risk Level 	This data uses Seismic Design categories to assign a level of risk to an area of the likelihood that it will experience an earthquake and the intensity of shaking and liquefaction.	USGS Earthquake Hazard Data 2018	Earthquake Country.org FEMA Seismic Mitigation in Multifamily Buildings FEMA Earthquake Safety PDF FEMA Earthquake Design Concepts PDF
Flooding Risk Level 	Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.	FEMA NFHL Datasets	Strategies for Multifamily Housing Resilience Keep Safe-A guide for Housing Resilience FEMA - What is Mitigation? FEMA Flood Mitigation for Multifamily Buildings FEMA - Floodproofing FEMA - Above the Flood

Hazard	Definition	Data Source	Resources to Reduce Risk
Landslide Risk Level 	The data delineate areas in the conterminous United States where large numbers of landslides have occurred and areas which are susceptible to landsliding. Susceptibility to landsliding was defined as the probable degree of response of the areal rocks and soils to natural or artificial cutting or loading of slopes or to anomalously high precipitation.	USGS Professional Paper 1183	Ready.gov Landslides & Debris Flow USGS Guide to Understanding Landslides
Sea Rise Risk Level 	Data provides information on potential impacts of sea level rise and future flooding if the location is within 6 feet of current mean high water. This data does not provide you with anticipated timing of sea level rise. Much of this modeling is best found through local modeling resources. Explore the timing of when this potential future sea level rise may occur for your locale or site.	NOAA Sea Level Rise Data Download	Sea Level Rise.org
Tornado Risk Level 	A tornado is part of a severe convective storm, and these storms occur all over the Earth, tornadoes are not limited to any specific geographic location. Tornadoes have been documented in every state of the United States. NOAA's National Severe Storms Laboratory (NSSL) Severe Weather 101 for more on the conditions necessary for tornado formation	NOAA National Centers for Environmental Information	Ready.gov FEMA High Wind Protection NOAA State of the Climate - Tornadoes
Tsunami Risk Level 	Data to identify the risk of a sea wave generated by an earthquake, landslide, volcanic eruption, or even by a large meteor hitting the ocean.	ASCE Hazard Tool	Ready.gov FEMA Tsunami Guidelines PDF
Wildfire Risk Level 	The wildfire hazard potential data is produced by the USDA Forest Service Fire Modeling Institute to help inform evaluations of wildfire risk across very large landscapes.	USDA Forest Service Fire Modeling Institute	FEMA Home Builder's Guide to Construction in Wildfire Zones PDF Mitigating Fire Risk USGS Ready.gov
Extreme Wind and Heat 	All property portfolios and residents in Miami face sustained wind and heat risks. Heat and wind mitigation techniques are included during the companion Building Level Assessment”	Wind Design Speeds Heat Indices	Ready.gov FEMA High Wind Protection EPA Heat Adaptation Guide

Portfolio Protect Supplemental Resource Guide

The following Enterprise Community Partners Disaster & Recovery Resilience resources can be used as you seek to make improvements to support the resiliency of your property:

- [Ready to Respond: Strategies for Multifamily Building Resilience](#)

Ready to Respond: Strategies for Multifamily Building Resilience is a collection of 19 practical strategies for building owners to make their properties more resilient against the effects of extreme weather events.

- [Ready to Respond: Disaster Staffing Toolkit](#)

The Ready to Respond: Disaster Staffing Toolkit is a guide developed for affordable multifamily housing organizations. It is designed to help organizations develop comprehensive disaster staffing plans to protect buildings, engage residents and continue business operations in the event of a disaster.

- [Creating a Healthy Home: A field Guide for Clean-up of Flooded Homes](#)

An illustrated step-by-step guide for do-it-yourselfers and contractors seeking to prevent mold-related health problems and save storm-damaged homes.

- [Made to Last: A Field Guide to Community Resilience, Vol 1](#)

This field guide for community resilience that highlights five diverse community development organizations leveraging culture and creativity to strengthen community resilience.

- [Keep Safe Guide](#) and [Keep Safe in Spanish](#)

This practical design and construction guidance produced by Enterprise, in collaboration with our partners, to help shape housing construction in Island Communities.

- [Communities Together Guide](#)

Communities Together is a guide that highlights physical design and infrastructure elements essential to creating community resilience hubs in communities.

- [Speakers Series](#)

The Enterprise Community Partners Multifamily Housing Resilience Speaker Series provides training to a variety of multifamily housing owners, operators, staff, developers, stakeholders and allied agencies on disaster preparedness response, planning and resilience. The series is part of Enterprise's ongoing efforts to strengthen the resilience of the affordable multifamily housing community.

- [University of Miami – Miami Affordability Project](#)

Developed by the University of Miami's [Office of Civic and Community Engagement](#), the **Miami Affordability Project (MAP)** is an interactive online map centered on the distribution of affordable housing and housing needs in the greater Miami area. The latest version of MAP, launched in 2020, includes data about sea level rise and flooding impacts as they relate to Miami's affordable housing stock.

Federal Programs

Below are Federal Programs for resources and guidelines that can help with resilience mitigation strategies and upgrades.

- [Weatherization Assistance Program](#)

Through the Weatherization Assistance Program (WAP), the U.S. Department of Energy (DOE) issues grants to states, territories, and some Indian tribes to improve the energy efficiency of low-income homes in their jurisdictions. The DOE and state governments do not directly issue grants to low-income families or perform the retrofits. Instead, states, territories and Indian governments contract with local governments and nonprofit agencies who provide the weatherization services. Low-income homes that qualify for the program will receive free weatherization services based on the needs of the home, and the rules established by the state.

- [Fannie Mae Green Initiative Loan Program](#)

The Fannie Mae Green Initiative provides owners of multifamily properties (rental or cooperative properties with 5 or more units) with valuable green financing solutions and tools to make smart energy- and water-saving property improvements. Its green financing programs include Green Rewards, Green Preservation Plus, and the Green Building Certification Pricing Break, all of which are eligible for a 10 basis points (0.1%) reduction in the all-in interest rate.

Over the life of a 10-year \$10 million loan, that could result in a savings of \$95,000 or more in interest. All Fannie Mae green loans are securitized as Green Mortgage Backed Securities (Green MBS).

- [Better Buildings Financing Navigator](#)

The Navigator is an online tool that helps public and private sector organizations find financing solutions for energy efficiency and renewable energy projects. Developed by the US Department of Energy's Better Buildings Initiative, the Navigator helps users explore a wide array of financing choices and identify relevant financing options for their energy projects.

- [DSIRE](#)

Database of State incentives for renewables and clean energy. DSIRE is the most comprehensive source of information on incentives and policies that support renewable energy and energy efficiency in the United States.

- [The Sustainability in Affordable Housing Lender Learning Network \(SAHLLN\)](#)

This is a network of affordable multifamily housing lenders, including Community Development Financial Institutions (CDFIs), housing finance agencies (HFAs), major financial institutions and specialized green financing entities. The network has compiled a database of resources for energy, resilience, and clean energy strategies and lending sources for the affordable housing market.

Federal Emergency Management Agency (FEMA)

- [Hazard Mitigation Grant Program \(HMGP\)](#)

The purpose of the HMGP program is to help communities implement hazard mitigation measures following a Presidential major disaster declaration. U.S. States and Territories, and Federally recognized tribes, apply for the grant. Non-profits and local governments access funding for individual projects by going through their respective state, tribe, or territory.

- [Building Resilient Infrastructure and Communities \(BRIC\)](#)

The purpose of the PDM grant program is to assist States, U.S. Territories, federally recognized tribes, and local communities in implementing a sustained pre-disaster natural hazard mitigation program. U.S. States and Territories, and Federally recognized tribes, apply for the grant. Non-profits and local governments access funding for individual projects by going through their respective state, tribe, or territory.

- [Emergency management performance grant \(EMPG\) program](#)

The EMPG Program provides resources to assist state, local, tribal and territorial governments in preparing for all hazards. EMPG funding supports projects such as strengthening a community's emergency management governance structures; updating and approving specific emergency plans; and initiating or achieving a whole community approach to security and emergency management. State emergency management agencies apply for the grant.

U.S. Department of Housing and Urban Development (HUD)

- [Community Development Block Grants Programs](#) - flexible grants made to states and units of general local government that must primarily benefit low- and moderate-income individuals.
- [CDBG Disaster Recovery Program](#) - provides flexible grants to help cities, counties, and states recover from Presidentially declared disasters. The grants focus on low-income areas, subject to availability of supplemental appropriations.
- [CDBG Entitlement Program](#) - provides annual grants on a formula basis to entitled cities and counties. The grants develop viable urban communities by providing decent housing, a suitable living environment, and expand economic opportunities for low- and moderate-income persons.
- [Recovery Housing Program](#) - allows states and the District of Columbia to provide stable, transitional housing for individuals in recovery from a substance-use disorder.
- [Section 108 Loan Guarantee Program](#) - is the loan guarantee provision of the CDBG Program. It provides communities a source of financing for economic development, housing rehabilitation, public facilities, and large-scale physical development projects.
- [State CDBG Program](#) - allows states to award grants to smaller units of general local government. The grants develop and preserve decent affordable housing by providing services to the most vulnerable in our communities and creating and retaining jobs.

U.S. Environmental Protection Agency (EPA)

- [Brownfields Area Wide Planning Grant](#): This grant can be used to conduct research and/or technical assistance activities that culminate in an area-wide plan for brownfields assessment, cleanup and subsequent reuse. Grant-funded activities must be directed to one or more catalyst, high priority brownfield site(s) located within a specific area, such as a neighborhood, downtown, business or arts district, a local commercial or industrial corridor, a community waterfront, one or more city blocks, etc.
- [Clean Water State Revolving Funds and Drinking Water State Revolving Funds](#): These are grants and loans for water infrastructure projects, managed by states. States are required to set aside part of these funds for green infrastructure, water or energy efficiency, or environmentally innovative projects. However, not all states advertise this funding, so it is worth a conversation with your state environmental department (or whatever department has jurisdiction over water issues) to see what's available. Make sure you let them know that you know there may be money available for these types of projects.
- [U.S. Department of Energy \(DOE\) Low Income Home Energy Assistance Program \(LIHEAP\)](#): a percentage of this funding can be used for low cost weatherization, energy efficiency improvements, and deployment of renewable energy.

National Oceanic and Atmospheric Administration (NOAA)

- [Regional coastal resilience grants](#) - intended to help coastal communities address increasing risks from extreme weather events, climate hazards, and changing ocean conditions. Awards are made for project proposals that advance resilience strategies, often through land and ocean use planning, disaster preparedness projects, environmental restoration, hazard mitigation planning, or other regional, state, or community planning efforts.

Guidelines for resilience implementation strategies

- [FEMA Earthquake Resources](#)
This catalog provides an overview of more than 80 National Earthquake Hazards Reduction Program publications and resources available to the public. Several new FEMA earthquake publications and training resources have become available since this catalog was last updated in December 2010. Each resource is listed with a short description, its cover image when available, and an icon for its availability. Many of the resources are available online and can be ordered from the FEMA Distribution Center.
- [Flood Insurance Manual](#)
This page contains a list of links to the current edition and previous editions of the Flood Insurance Manual. The Flood Insurance Manual is used primarily by insurance companies and agents writing National Flood Insurance.

- **FEMA Above the Flood**

This publication shows how flood prone houses in south Florida were elevated above the 100- year flood level following Hurricane Andrew. Alternative elevation techniques are also demonstrated.

- [FEMA Coastal Construction Manual](#)

The 2011 CCM, 4th Ed. (FEMA P-55), is a 2-volume publication that provides a comprehensive approach to planning, siting, designing, constructing, and maintaining homes in the coastal environment. Volume I provide information about hazard identification, siting decisions, regulatory requirements, economic implications, and risk management. The primary audience for Volume I is design professionals, officials, and those involved in the decision-making process. Volume II contains in-depth descriptions of design, construction, and maintenance practices that, when followed, will increase the durability of residential buildings in the harsh coastal environment and reduce economic losses associated with coastal natural disasters. The primary audience for Volume II is the design professional who is familiar with building codes and standards and has a basic understanding of engineering principles.

- [FEMA Home Builder's Guide to Construction in Wildfire Zones](#)

Provides information about wildfire behavior and recommendations for building design and construction methods in the wildland/urban interface. Implementation of the recommended design and construction methods can greatly increase the chances of a building's survival in a wildfire.

- [HUD Stronger Housing, Safer Communities: Strategies for Seismic and Flood Risks](#)

This program webpage details housing and community vulnerability due to earthquakes and sea level rise. It also provides strategies that reduce these vulnerabilities to help the San Francisco Bay Area meet its resilience and sustainability goals.

- [Sea Level Rise](#)

Sealevelrise's vision is to enlighten and enable elected officials to implement widespread solutions to sea level rise. While there are many groups that benefit from the output of [SeaLevelRise.org](#), we craft everything we do to be useful for elected officials and community leaders.

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