

NEEDS + OPPORTUNITIES

What's in this chapter?

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Risk Assessment

Analysis of the level of risk faced by important assets in the Study Area.

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Needs + Opportunities

Resilience needs in the Study Area and opportunities to address them.

Risk Assessment

A risk assessment was conducted to evaluate the level of risk of community assets to flooding and extreme weather events. The results of the risk assessment, in combination with the identified needs and opportunities, were used as the starting point for developing recommended projects and policies, as outlined in Chapter 9, Project Profiles.

Asset Inventory

Assets were identified using existing Comprehensive Plans, Hazard Mitigation Plans, and other plan documents in each CLEAR municipality. Additional assets were identified through the use of online mapping software. A survey of Steering Committee and community members was used to supplement the assets identified by the Project Team.

For this inventory, assets were considered places or features whose loss or impairment due to flooding or storm events would compromise essential social, economic, and environmental functions or critical facilities in the community. This includes assets like businesses and restaurants, lakefront neighborhoods, beaches and parks, roads and bridges, and hospitals and fire stations.

For this inventory, assets were limited to those located within the Risk Areas identified by DOS.

Note: The asset inventory and risk assessment calculations can be found in the Appendix to this report.

What is risk?

Risk is the chance that an asset will be damaged or destroyed from fluctuating water levels or an extreme storm event.

What is resilience?

Resilience is the capacity for a community and its ecosystem to withstand extreme events and other forces or risks; to quickly recover the interconnected social, economic, and ecological systems' structure and function in the aftermath of a disaster; and to develop ongoing adaptability to rapidly changing environmental conditions and forces.

Asset Inventory

Over 120 assets were identified by the Steering Committee and community members. These assets are grouped into 5 categories. A sampling of selected assets is shown below.

120+
total assets
identified

Economic



Housing



Natural + Cultural Resources



Infrastructure



Health + Social Services



- **Marge's Lakeside Inn**
- Port of Rochester
- Baycreek Paddling Center
- Don's Original
- Westpoint Marina
- Rochester Yacht Club

- **Homes on Wautoma Beach Road**
- Homes on Edgemere Dr.
- German Village Homes
- Westage at the Harbor
- Unionville Station Townhomes

- **Hamlin Beach State Park**
- Charlotte Pier
- Ellison Park
- Genesee Riverway Trail
- Ontario Beach Park
- Salmon Creek Preserve
- Webster Park

- **Bay Outlet Swing Bridge**
- Brockport WTP
- Flynn Road Pump Station
- Septic Systems on Bay Shore Boulevard
- Lake Ontario State Parkway

- **U.S. Coast Guard Station**
- Monroe County Sheriff Marine Unit
- Long Pond Road Firehouse
- UR Medicine Home Care
- Plank Road South Elementary School

Risk Assessment

Risk Assessment Tool

Each asset was run through the Asset Inventory and Risk Assessment Tool, a testing methodology developed by DOS. This tool is used for other State programs, including the Climate Smart Communities (CSC) Certification Program, and is publicly available.

Measuring Risk

The tool multiplies three variables (hazard, exposure, and vulnerability) together to determine an overall risk score for each asset. The **hazard score** measures the likelihood that an asset will be impacted by future storm events. The **exposure score** considers factors like erosion rate and the presence (or absence) of shore defense protection features to determine how these landscape elements may moderate the impact of extreme weather events on that particular asset. Finally, the

vulnerability score uses factors like age of structures and erodibility of soils to measure the potential level of impairment an asset might experience as a result of a storm event.

Risk Levels

The overall risk score that results from these variables falls into four categories based on level of risk.

Severe risk The highest level of risk is severe. These assets are considered to be in a dangerous situation where exposure and vulnerability should be reduced if possible and relocation may need to be seriously considered.

8% of assets in this study are considered at severe risk. While this percentage is relatively small, these assets do include several single-family neighborhoods on the lakeshore where flood damage poses a severe threat to life and property.

High risk Assets at high risk are likely to lose functionality for an extended period of time. Actions to reduce vulnerability, including elevating and flood-proofing structures, may be necessary.

Most of the assets identified in this study (64%) are at high risk.

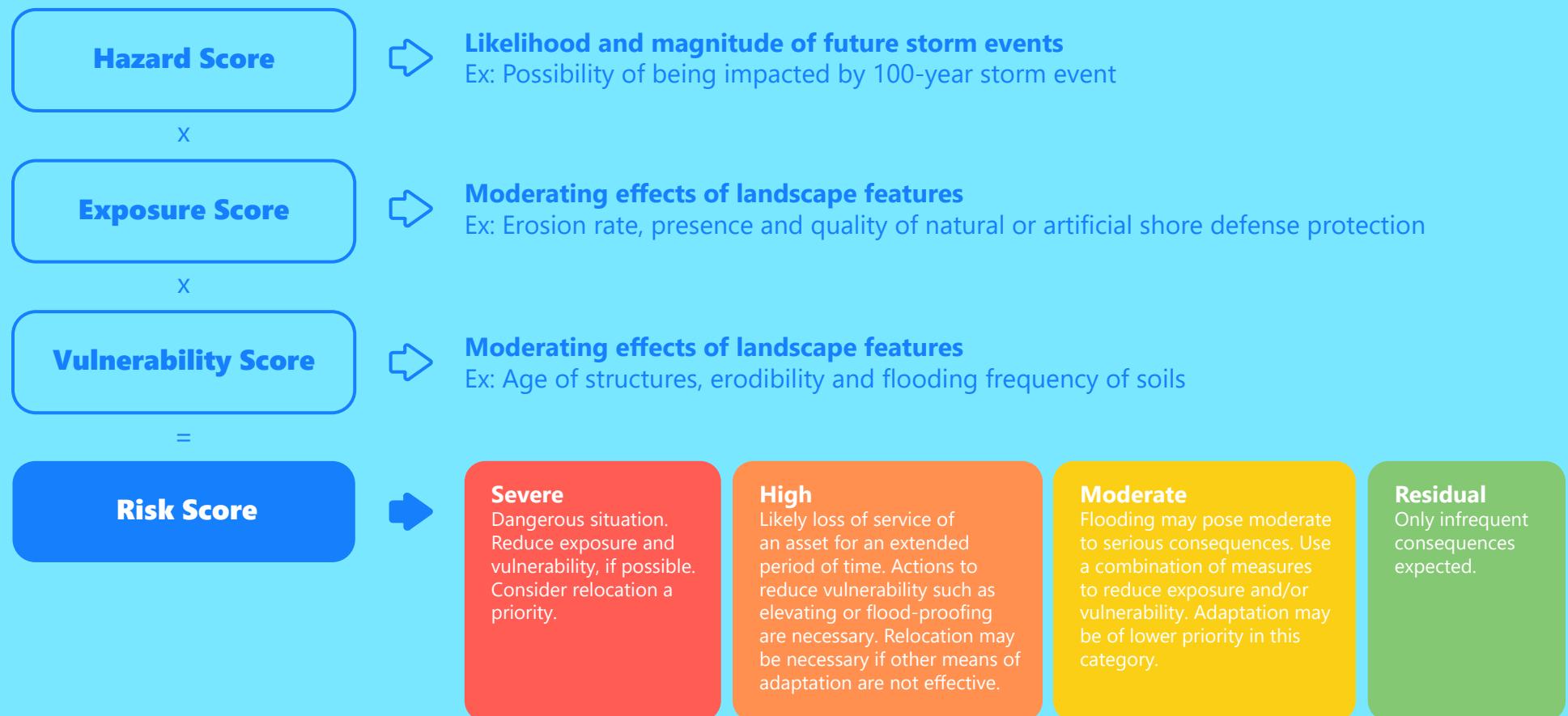
Moderate risk Assets at moderate risk may experience moderate to serious consequences from flooding. For these assets, a combination of measures to reduce exposure and vulnerability should be considered, but adaptation is generally of lower priority.

Residual risk Assets at residual risk experience only infrequent consequences from extreme weather.

None of the identified assets in this study ranked as having residual risk.

Risk Formula

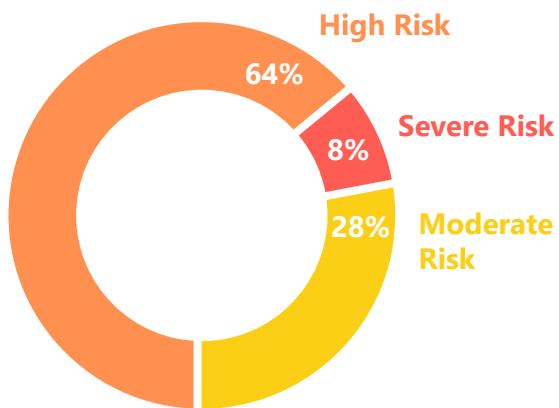
The following formula was used to measure the level of risk for each identified asset. The hazard, exposure, and vulnerability scores were informed by geo-spatial mapping, aerial imagery, site visits, and other publicly available data.



Risk Assessment

Results Summary

Most assets (64%) in the CLEAR Study Area are at high risk, meaning that they are likely to experience long-term loss of service as a result of an extreme weather event. Another 28% of assets are at moderate risk and 8% are at severe risk.



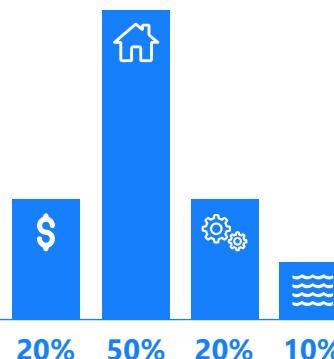
Key Findings

1. All assets in the CLEAR Study Area experience some risk to flooding, fluctuating water levels, and extreme weather events. This underscores the importance of planning for and implementing projects that promote resilience.
2. Housing assets are at the most severe risk. These assets will require considerable mitigation to reduce vulnerability and exposure and may require relocation in the future.
3. Infrastructure and natural resource assets see the most risk in the high and moderate categories. Steps should be taken to reduce exposure and vulnerability for these assets in order to protect their continued use during and after storm events.
4. Economic assets see a considerable amount of risk across the range from severe to moderate. Steps should be taken to ensure that businesses and employment centers face as little disruption as possible during and after storm events.
5. Health and social services assets exhibit the least risk across the categories, signaling that these assets have existing capacity to either withstand or adapt to severe weather events and ensure their continued function.

Risk Assessment

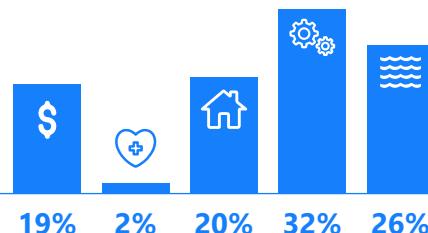
Severe Risk

Dangerous situation. Consider relocation.



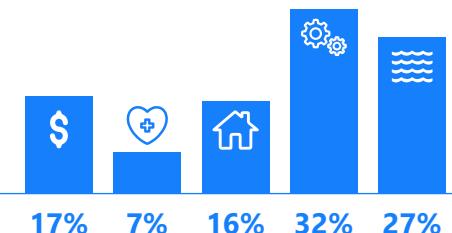
High Risk

Long-term loss of service. Take action to reduce vulnerability. May require relocation.



Moderate Risk

Potential for moderate or serious consequences. Reduce exposure and/or vulnerability.



Economic assets



Health + social services assets



Housing assets



Infrastructure assets



Natural and cultural resources assets

Needs + Opportunities

Several opportunities have been identified to address existing needs and gaps in CLEAR communities' capacity to prepare for and recover from high-water and storm events.

Assessment Process

Needs and opportunities were identified based on the findings from the Community Profiles, the historic impacts of high-water events, the Risk Assessment, and in consultation with Steering Committee and community members.

The needs and opportunities are organized into the six Resiliency Areas that are included in this plan's Guiding Framework (as outlined in **Chapter 6, Vision, Goals + Strategies**). The projects proposed later in this plan attempt to address these needs and capitalize on the opportunities.



Edgemere Drive, Flooding 2019

Needs + Opportunities



Community Planning + Capacity

Do current laws, regulations, and special purpose plans integrate socioeconomic, demographic, risk assessment, and consideration of vulnerable populations?

Needs

1. It is difficult to navigate insurance, FEMA assistance, and permitting to rebuild homes after disaster events.
2. Building and land development regulations do not address climate change considerations.
3. Comprehensive plans and other master plan/visioning documents do not address disaster recovery.
4. Open space is available for development in hazard areas.
5. Public awareness and involvement in long-term community recovery is not as strong as it could be.

Opportunities

1. One-stop centers could provide property owners with information on financial assistance, business counseling, stream-lined permitting, and relocation assistance.
2. Municipalities should establish thresholds of damage in the community that require compliance with current codes and ordinances.
3. Recovery policy should be integrated into existing plans and required in future plans.
4. Acquisitions of open space can be used to mitigate future disasters and create space for conservation and recreation.
5. Long-term community engagement can create a greater understanding of local concerns and community attitudes about proposed policies and programs.

Needs + Opportunities



Health + Social Services

What needs to be addressed to promote the resilience, health, and well-being of affected individuals and communities?

Needs

1. Socially vulnerable populations and Environmental Justice (EJ) communities may have increased difficulty preparing for, responding to, and coping with flooding and other coastal hazards.
2. Neighborhoods along the waterfront need to be thoughtfully planned and designed.
3. There are barriers to implementing projects in Environmental Justice communities, including the costs of environmental remediation and difficulty applying for and receiving grant funding.
4. Major hospital and healthcare facilities are vulnerable to flooding and other coastal hazards.

Opportunities

1. Social equity should be promoted to ensure that all segments of the population can access emergency services and evacuate when necessary.
2. Planning and design in waterfront neighborhoods should advance the goals of the Local Waterfront Revitalization Programs (LWRPs) in the communities that have adopted them.
3. Take steps to ensure that disadvantaged communities benefit from resilience efforts, resources, and funding opportunities.
4. Ensure that medical facilities can provide life-saving services and continue operations during disaster events.

Needs + Opportunities



Infrastructure

What investments in infrastructure would most effectively stimulate and support economic growth and promote resiliency?

Needs

1. Flood damage to water, wastewater, and stormwater facilities needs to be mitigated, especially in high and extreme hazard areas.

2. Bridges and roadways in high and extreme hazard areas may become impassable during flooding and other coastal hazard events.

3. Marine commerce facilities in moderate, high, and extreme risk areas are at risk of flooding.

Opportunities

1. Take steps to ensure continuity of operations for lifeline utility systems in the region.

2. Ensure continued use of vital transportation infrastructure, even in disaster scenarios, to allow for evacuation if need be and to preserve regional connectivity.

3. Ensure future enjoyment of water-dependent commercial and recreational assets along the waterfront.

Needs + Opportunities



Economic

What steps can be taken to increase resiliency and ensure continued operations at lakefront and water-oriented businesses?

Needs

1. Lakefront and water-oriented businesses are vulnerable to fluctuating water levels.
2. Business operations can be interrupted during high and low water events.
3. Economic output from waterfront activities like fishing and boating could be increased.

Opportunities

1. Promote resiliency strategies for lakefront and water-oriented businesses to ensure they are dynamic and responsive to lake level changes and climate events.
2. Help businesses maintain more consistent visitation patterns and minimize loss of business.
3. Enhance public access to the waterfront to generate greater economic output from people using the water and visiting the area.

Needs + Opportunities



Housing

Do homeowners in some areas need to be incentivized to elevate or retrofit homes in order to be more resilient in future storms?

Needs

1. There is a cost to keeping lakefront housing "as-is."
2. Housing exists in risk areas and is subject to likely flooding and erosion.
3. Outdated housing stock is not prepared for and is more vulnerable to high water events.

Opportunities

1. Educational campaigns could make home- and property-owners aware of the potential consequences of not taking any mitigation actions in future extreme weather scenarios.
2. A multi-pronged approach should be established to move housing away from risk areas and protect it through shoreline improvements.
3. Incentivize retrofits in order to be more resilient in the future.

Needs + Opportunities



Natural + Cultural Resources

What steps are needed to prevent damage and bring damaged public recreational infrastructure back to full operation for use by residents and tourists?

Needs

1. Beaches, dunes, bluffs, and near-shore areas are subject to erosion.
2. Green infrastructure solutions need encouragement to be adopted.
3. Increased impervious surface cover and decreased riparian buffer areas exacerbate flooding, runoff, and pollutant loads.

Opportunities

1. Appropriate coastal protection techniques should be used to either control or preserve shoreline erosion.
2. Funding should be secured to invest in green infrastructure solutions.
3. Impervious surface cover should be reduced and riparian buffer areas should be restored to help control flooding and preserve water quality.

NEEDS + OPPORTUNITIES

