NEW YORK STATE OF OPPORTUNITY. | Office of Planning and Development

SELECTING RESILIENCE STRATEGIES THAT WORK FOR YOUR COMMUNITY

Local Government Training Workshop
Erie County

An Office of the New York State Department of State

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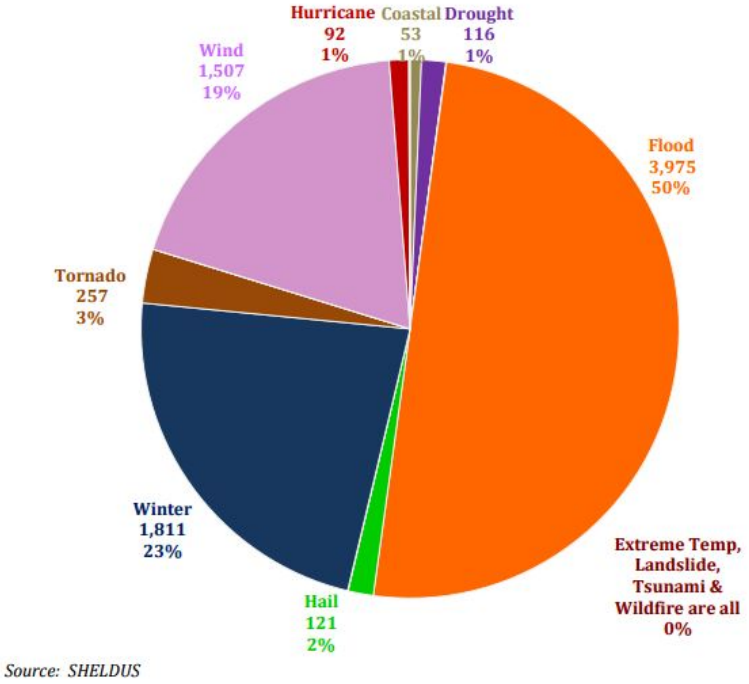
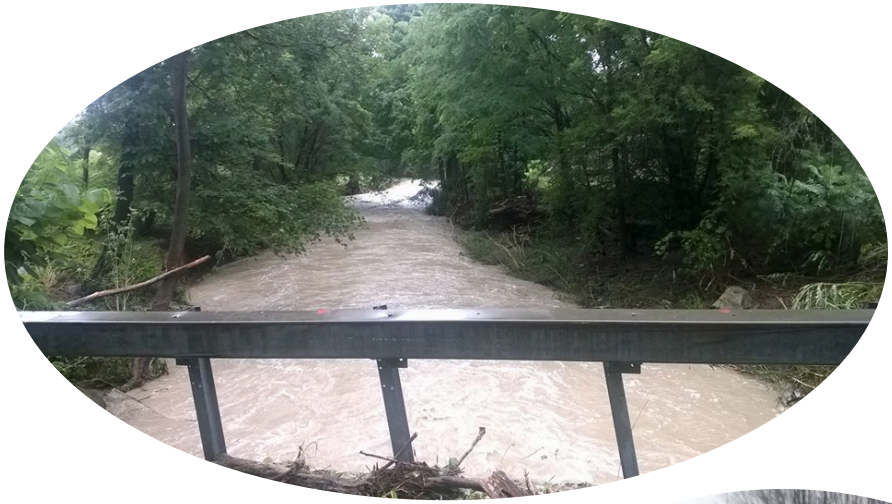
Resilience through land-use planning

- Resilience to.....
  - Flooding (↑precip, snowmelt, stormwater runoff)
  - Natural hazards (storms, erosion)

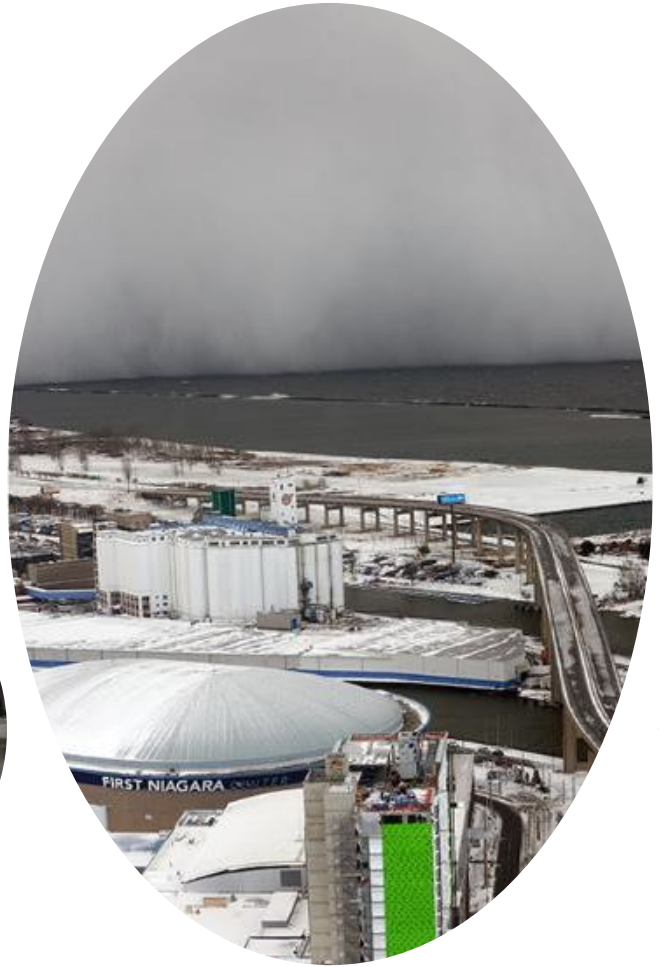


- Why land use planning?
  - Well within local governments' control
  - Many co-benefits
  - Effective tool to reduce flood risk



http://wivb.com/2015/07/14/flooding-in-parts-of-chautauqua-county-tuesday-morning

Erie County Legislature



AP Phots/Gary Wiepert

A socio-economic analysis by The Economist Intelligence Unit

Flood mitigation investment returns positive benefits

The benefits of flood mitigation go beyond dollars and cents. The Economist Intelligence Unit found that investment to make homes and infrastructure more flood-proof returns positive economic, environmental, and social benefits for communities. We reveal the flood mitigation actions, challenges and benefits for 11 flood-affected communities across the US.

Photo by Josh Funk Photography

www.floodeconomics.com

Benefits of mitigation

Economic benefits

$12.4 million

Total monetized benefits

Return on investment

253.1%

Estimated return on investment

Benefit-cost ratio

3.5

Benefit-cost ratio of the DeKalb County projects

Source: Dewberry. Drew Valley Flood Mitigation in DeKalb County, Georgia – Risk map before its time.

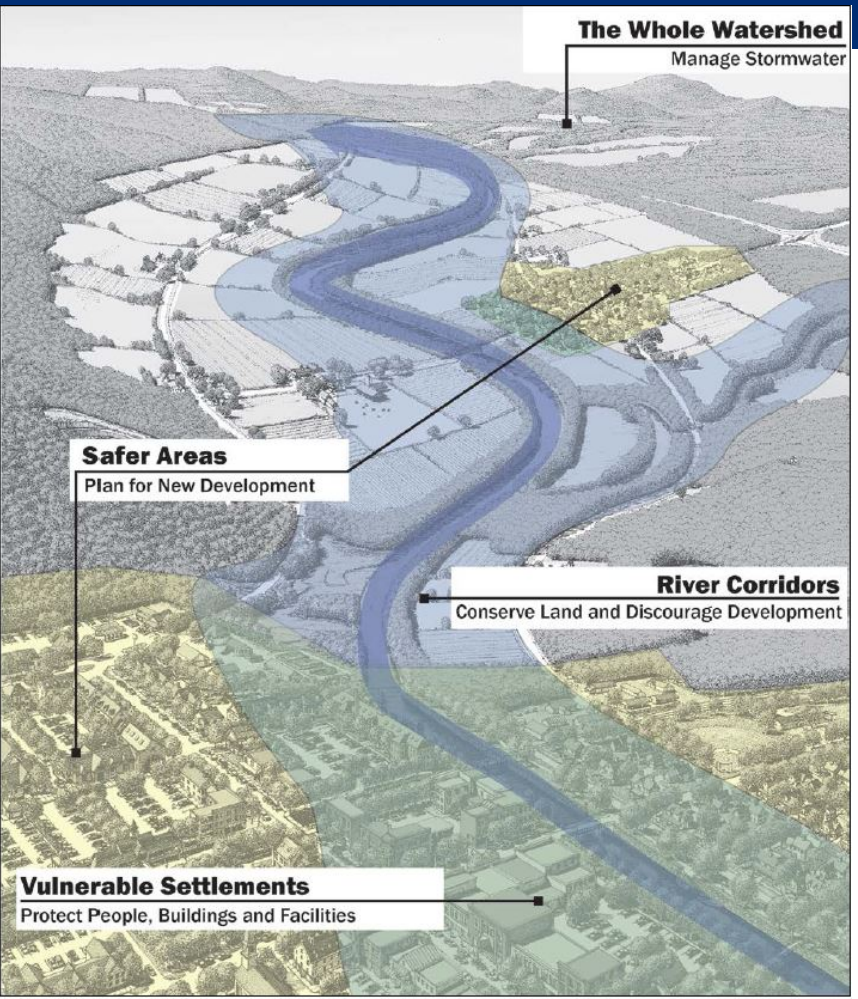
Planning for resilience

- Climate change information
- Identifying risk
- Needs and opportunities analysis
- Community engagement/dialogue
- Importance of plan updates to incorporate resilience (e.g. comprehensive plan, watershed mgmt. plan)

Options to address resilience

- **Land use management**
- **Resilient construction**
- **Natural protective features**

- Information/behavior modification
- Market pricing
- Structural defenses



Credit: Vermont Agency of Commerce and Community Development

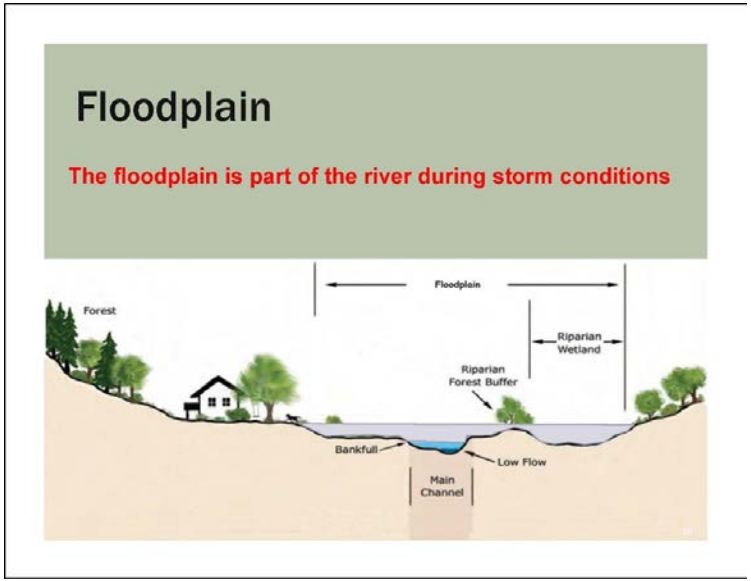
Regulatory

- Zoning
  - Zoning incentives
  - TDR
- Subdivision review
- Site plan review

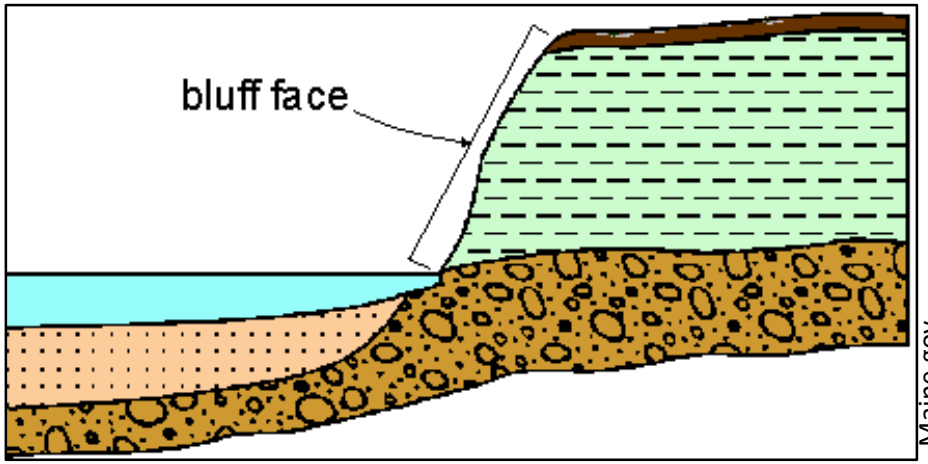
Non-regulatory

- Land acquisition
  - Community Preservation Fund
  - Conservation easements
- Property buyouts
- Insurance
- Capital Development Plan

Natural Features Reduce Risk



Delaware County Soil and Water Conservation District, Walton, NY



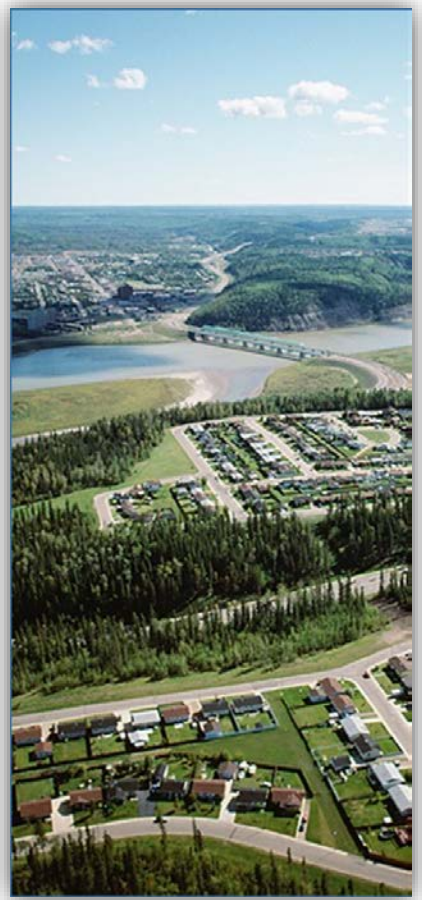
Maine.gov

How do they reduce risk?

- Reduce energy
- Absorb water

How do they reduce risk?

- Barrier
- Reduce energy
- Supplies sediment

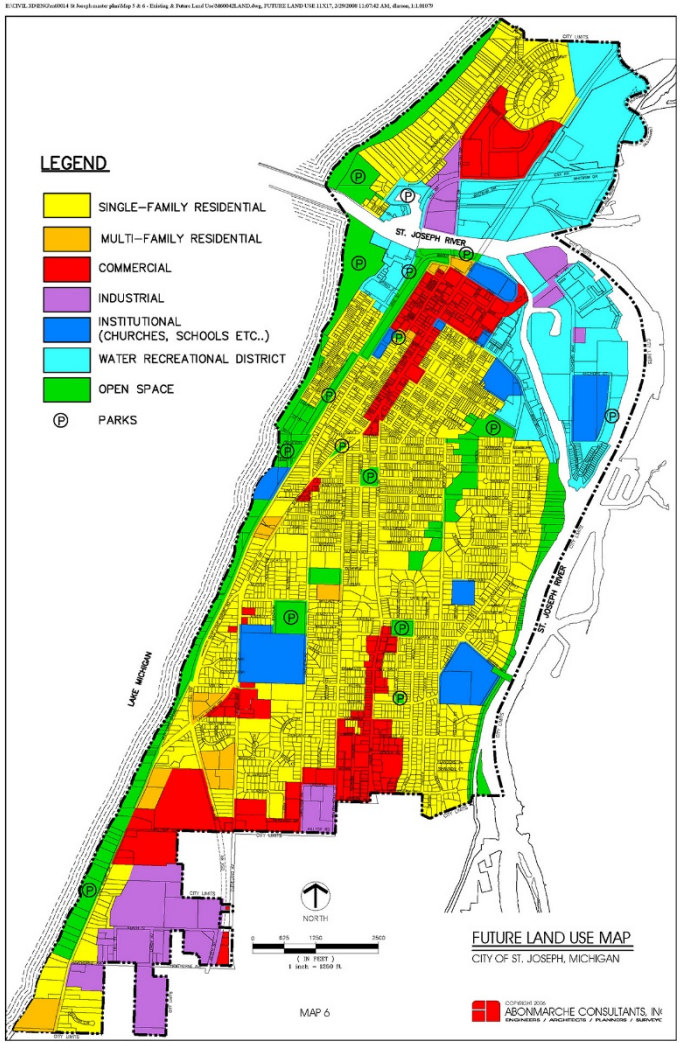


Community Risk and Resiliency Act: Model Local Law Categories

- Basic Tools
- Watercourse and Wetlands Protection Measures
- Coastal Shoreline Protection
- Management of Floodplain Development
- Stormwater Control Measures

Basic Tools for regulating use and development of land

- Zoning districts
  - Overlay zone
- Density Standards
  - Minimum lot size
  - Maximum lot coverage
- Nonconformance
- Subdivision regulations
  - Drainage improvements
  - Conservation subdivision (cluster)



Open Space

Pierce County, Washington

Transfer of Development Rights (TDR)

- Identify land for protection
- Identify land for development

Cluster subdivision

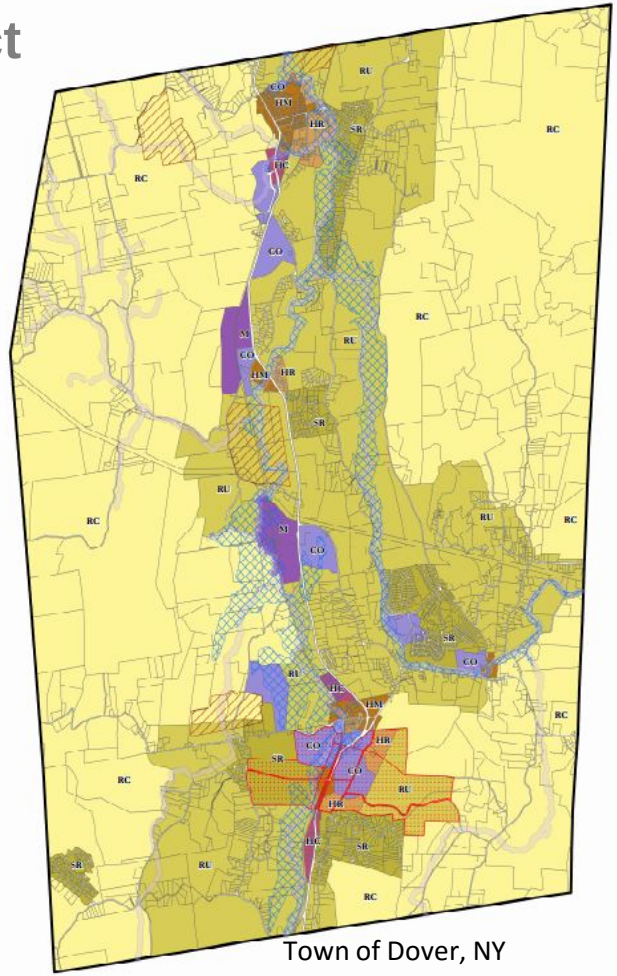
Mass.gov

Floodplain Overlay District

- A zoning overlay district that restricts residential and potentially hazardous uses in the floodplain
- Goal to limit flood damage and protect public health and water quality.
- Boundary follows NFIP 100-year floodplain

Zoning Districts

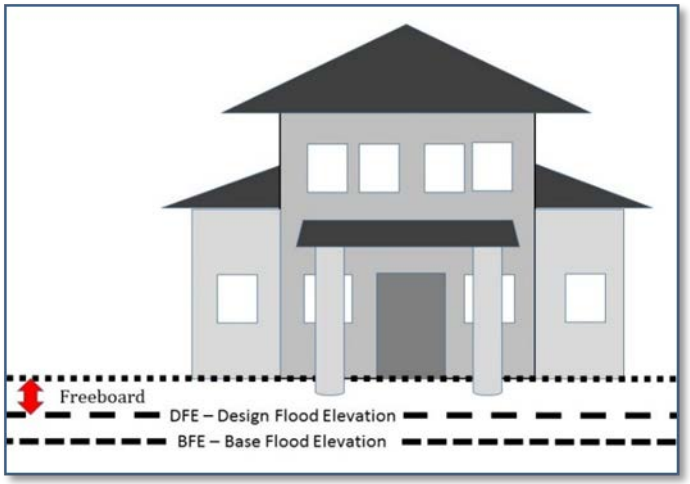
- CO, COMMERICAL/INDUSTRY/OFFICE
- HC, HIGHWAY COMMERICAL DISTRICT
- HM, HAMLET MIXED USE DISTRICT
- HR, HAMLET RESIDENTIAL DISTRICT
- M, INDUSTRIAL/MANUFACTURING
- RC, RESOURCE CONSERVATION DISTRICT
- RU, RURAL DISTRICT
- SR, SUBURBAN RESIDENTIAL
- MIXED USE INSTITUTIONAL CONVERSION OVEI
- FLOOD PLAIN OVERLAY DISTRICT
- SOIL MINING OVERLAY DISTRICT
- STREAM CORRIDOR BUFFER OVERLAY



Town of Dover, NY

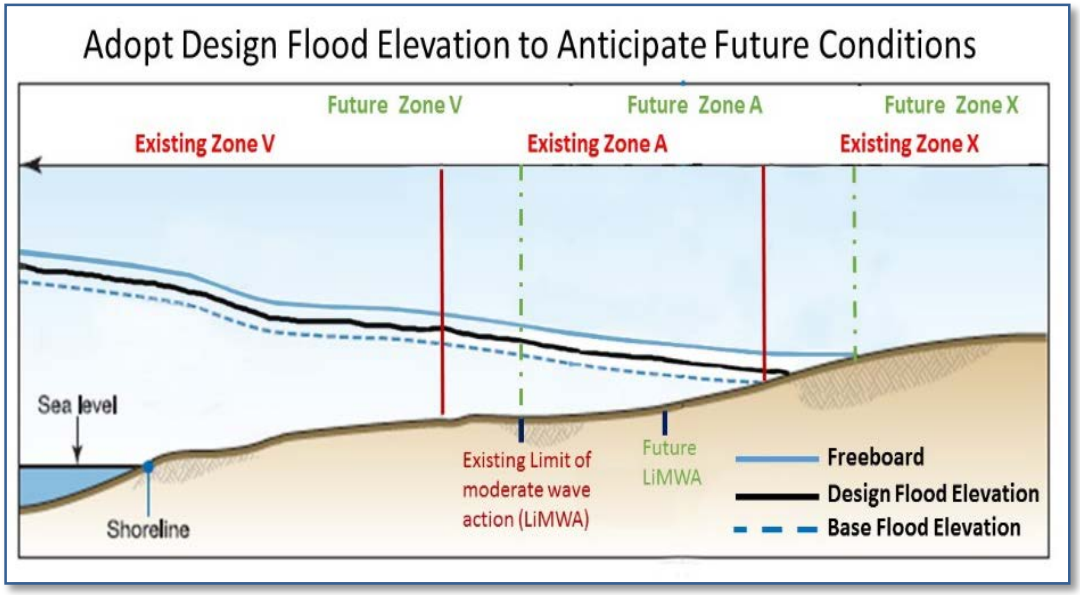
Base Flood Elevation vs. Design Flood Elevation

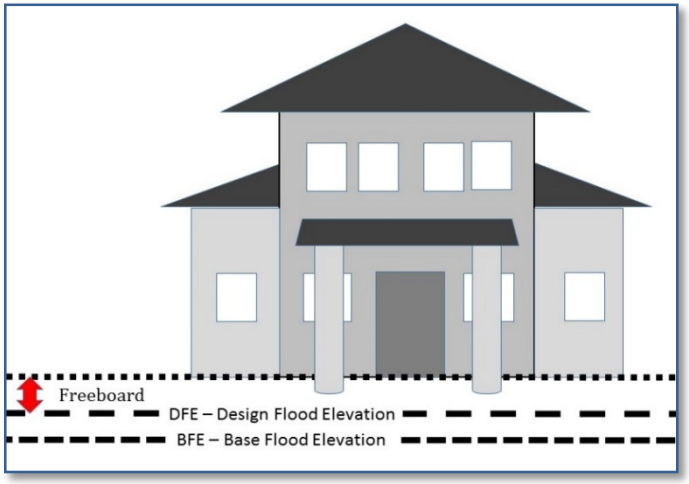
- BFE = the computed elevation to which floodwater is anticipated to rise during the base flood (100-year flood)
- DFE = The regulatory flood elevation adopted by the municipality that equals or exceeds the base flood elevation.
- Freeboard = The vertical difference between the lowest floor of a building and the BFE (in NYS, 2 feet)



Establish Design Flood Elevation (DFE)

- Current freeboard (2 ft.) based on BFE
- DFE can be higher than BFE





Examples of basis for DFE:

- 500-yr flood elevation
- Extra height added to BFE
- Historical events
- Future conditions hydrology

Stormwater Mgmt and Erosion & Sediment Control

- Updated Sample Local Law for stormwater management and erosion & sediment control
  - Base Version: MS4 General Permit updates, green infrastructure practices from NYS SWDM. Will be required for MS4 Operators
  - Resiliency Version: additional provisions that allow municipalities to require a more detailed green infrastructure site planning process & emphasize protection of buffers, floodplains, and coastal areas.

http://www.dec.ny.gov/chemical/41392.html

Buffalo Green Code

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Steep Slope Protection Overlay

- Goal: Minimize impacts of development activities

- Benefits
  - Enhance flood protection.
  - Maintain and improve surface water quality.
  - Preserve wildlife habitats
  - Protect stabilizing vegetation
  - Preserve aesthetics.
  - Maintain soils and slope stability.
  - Control adverse impacts of existing development.

Shoreline Stabilization

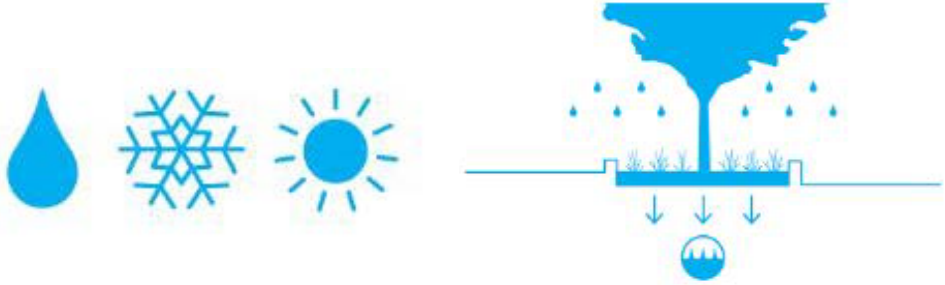
Shoreline Stabilization techniques generally fall into three categories:

1. Natural
2. Nature-based
3. Structural

Shoreline protection alternatives analysis which promote the use of natural or nature-based methods through the site plan or special use permits process

Street Design

Ramboll



Local Climate

Consider local climates, average temperatures, and frequency of extreme weather events.

- Protection from extreme heat, heavy rains, snow, or strong winds
- Minimize UHI
- Solar exposure and snow removal in colder climate
- Adaptable to natural disasters

Green Infrastructure

Locate existing trees and planted areas. Take note of the local climate, planting seasons, and species. Identify the water table, sub-surface conditions, and utilities.

- Air quality improvement
- Shade
- Water management system improvement
- Native species
- Microclimate improvements

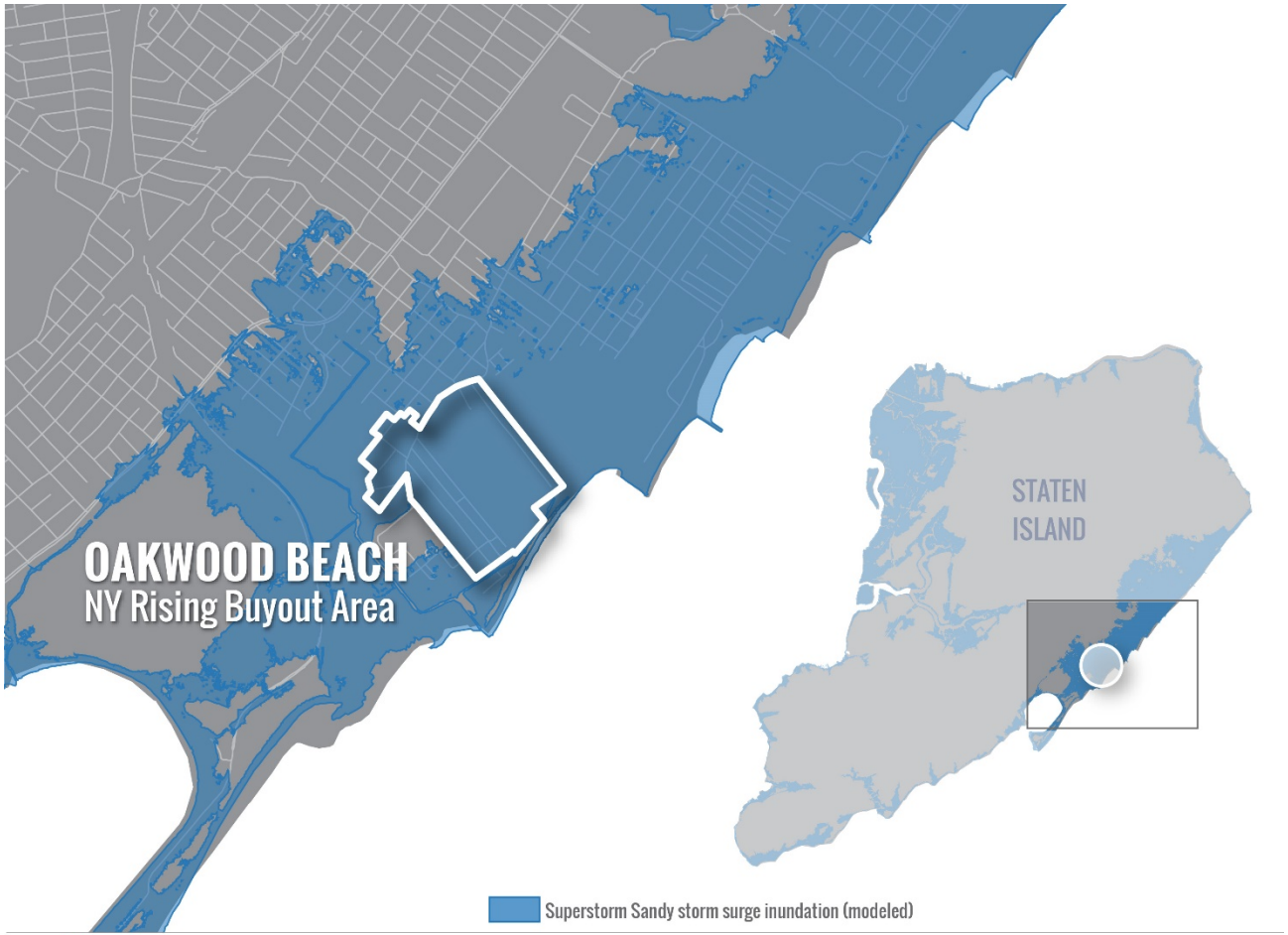
Case Studies

Village of Sidney GreenPlain

Strategy: Use sustainable green infrastructure to mitigate flooding along the Susquehanna River and Weir Creek for the Village and its neighbors:

- Design, assemble, and construct the 140 acre Sidney GreenPlain- a high capacity floodplain and recreational area
- FEMA HMGP
- Buyouts of 135 properties

Acquisition



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NYSDOS OPD Assistance

- Consolidated Funding Application 2017-2018: Environmental Protection Fund Local Waterfront Revitalization Program ($15.2 M)
  - RFA Available May 1
  - Applications due June 28
  - Local Match Requirements: 25%
  - CFA Workshop at SUNY Fredonia May 4
- Technical assistance
  - Resilience planning
  - Shoreline management
  - Waterfront planning/LWRP

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