ADAPTVA.org

Project Partners

Center for Coastal Resources Management
Virginia Institute of Marine Science
Wetlands Watch
William & Mary Law School
Virginia Coastal Policy Center
William & Mary
Public Policy

Virginia Department of Conservation and Recreation
Climate change is responsible for changes in water levels, temperature, and precipitation. Our ability to forecast these changes helps mitigate impacts and plan for resilient communities. Forecasting traditionally uses historic data to determine the direction of future trends. Uncertainty is introduced when processes affecting change are not static over long time periods. Strategic integration of information across planning horizons can allow communities to more effectively plan for the next tide, a catastrophic storm, or a future landscape that might look very different from today.

Information on water levels now and into the future; real-time data, near and long-term predictions

How deep and where will the water be from various sea level rise scenarios

Historic data and projections

Tidewatch network of 10 observing stations predicts a 30 hour water level forecast

About VA Sea Level

Sea Level Viewer
Virginia Sea Level

Sea Level in Virginia
Historic data and projections

- Mean Sea Level (RL 07/08)
- Year
Extratidal Water Level: 36-Hour Forecast

Sewells Point, VA (SWPT)

Other Intervals: Last 30 days | Last 3 days | Last 30 days of Last 3 days | 36-hour Forecast
ADAPT VIRGINIA
Evidence-based planning for changing climate

Adaptations

Learn how human and natural systems adjust to a new or changing environment. Adaptation can be measures that moderate negative effects, cope with the consequences of change, or those that take advantage of opportunities.

Flood adaptation categories:
Management/Retreat
Human impacts are minimized by avoiding, minimizing or regulating human use of the coastal area.
Accommodation
Humans continue to use and occupy the coast, but adapt to reduce flood impact.
Protection
Structural (hard or soft) engineering aims to protect the land from the water.

View flood adaptation matrix

SHORELINES
Green-gray approaches to shorelines can provide protection to ensure coastal community and shoreline resilience.

See and read the stories of living green and gray shoreline projects in and around Virginia:

Living Shorelines Story Map
Gray Shorelines Story Map

INFRASTRUCTURE
Where we live, work, learn, shop and play, how we get around and the power and water that support us are all subject to climate and flooding effects. Adaptation practices can make our infrastructure more resilient.

Building Modification Story Map
Managed Retreat Story Map
Transportation Adaptation Story Map
Water Storage and Management Story Map

PLANNING
Decisions which incorporate forecasted conditions increase the opportunity for sustainability and resiliency of human and natural habitats.

Zoning Story Map
Planning Story Map

FUNDING
Economic drivers from flood insurance to building loans to natural capital finance all play a role in climate adaptation.

Financial Incentives Story Map
Living Shorelines:
Using Natural and Nature-Based Features

Living shorelines in lower energy settings can provide long-term protection, restoration, and enhancement of vegetated shoreline habitats through the strategic placement of plants, stone, sand fill and other structural or organic materials.

Explore case studies that highlight the use of natural or nature-based features to adapt to climate impacts.

Navigate through the stories three ways: scrolling down, using the bullet links to the left, or clicking on the box below.

- VA: Travelling Marsh, Gloucester
- Hermitage Museum & Gardens Oyster Reef and Living Shoreline, Norfolk
- Johns Point Living Shoreline, Gloucester
- Haven Creek Wetland and Walking Path Restoration, Norfolk
- Hell Cove Living Shoreline, Maryland
- Holy Point Nature Park, Dealeville
- Alewife Street Project, Norfolk
- Virginia Zoo Living Shoreline and Oyster Reef, Norfolk
- St. John's Rockingale Living Shoreline, Oyster
- Hull Springs Farm Living Shoreline, Montross
- Rehoboth Living Shorelines, Rehoboth
- Jamestown Beach Restoration, Jamestown
- Rodeses Living Shoreline, Hampton
Living Shorelines:
Using Natural and Nature-Based Features

John's Point Living Shoreline, Gloucester

Overhead image of the John's Point Landing, with breakwaters and newly marsh visible.
Photo: Google Earth

Project Goals: Reduce erosion, create easy access for small boat launching, improve parking lot, provide a public demonstration site for living shorelines

Techniques Used: Debris removal, segmented rock breakwaters, sand infill, salt marsh vegetation planting, geese exclusion fencing

Project Size: Approximately 300 linear feet of shoreline protected, 5,250 square feet of wetlands created

Project Partners: Gloucester County, VA Institute of Marine Science (VIMS), volunteer labor and materials donations

Funding Partners: Chesapeake Bay Trust, National Wildlife Foundation
Adaptation Stories:
Managed Retreat

Managed retreat is the practice of moving communities, buildings, and other infrastructure landward, out of areas likely to flood. This practice reduces potential damages to valuable infrastructure and also allows beaches and marshes to migrate inland, slowing habitat loss.

These case studies highlight different techniques that communities have used to move infrastructure out of vulnerable areas.

Navigate through the stories three ways: scrolling down, using the bullet links to the left, or clicking on the link below.

- Managed Retreat: Surfers' Point Park, Ventura, CA
- End of Road Managed Retreat, Warwick, RI
- Managed Retreat: Pacifica State Beach, Pacifica, CA
- Property Buyout: Three neighborhoods, Staten Island, NY
- Property Buyout: Montauk, NY
- Community Buyout: Isle de Jean Charles, LA
- Additional Resources

Photo at right: Houses in Oceanwood Beach, Staten Island, avoid demolition after major damage from 2012 storms caused homeowners to sell their properties to the state. Photo: Nathan Kangasniemi Curbed New York

Managed Retreat: Surfers' Point Park, Ventura, California
Adaptation Stories:
Managed Retreat

Property Buyout: Three Neighborhoods, Staten Island, New York

A storm-damaged home in Oakwood Beach is torn down. After the owners, and most of their neighbors, accepted a buyout offer from the State, the neighborhood will not be redeveloped and will be allowed to go back to its natural wetlands state and function as a natural buffer against storm surge and flooding. Photo: Nathan Kensinger/courtesy New York

Project Goals: Assist homeowners living in high-risk areas to relocate to lower-risk areas, create a natural buffer for future storms, reduce damage costs in future storms

Techniques Used: Voluntary buyout of at-risk properties
Infrastructure Adaptation: Building Modifications

Where we live, work, learn, shop and play, how we get around and the power and water that support us are all subject to climate and flooding effects. Adaptation practices can make our infrastructure more resilient.

Explore these case studies that highlight ways to build new or retrofit older buildings with flood resistant features.

- New Building Floodproofing: VIMS Eastern Shore Seawater Lab, VA
- Floodproofing Benefits: Brothers Hall, VA
- Floodproofing Benefits: Chrysler Museum, VA
- Elevating Homes: Gloucester, VA
- Elevating Homes: Unit 6A: Salisbury and Quincy, MA
- Building a New Resilient Community: Queen's, NY
- Amphibians Haven: New Building: CA
- Amphibians Haven: Benefits: LA
- Additional Resources

Photos at right: Partners of Norfolk flood during a high tide. Photo: Midlands Watch

New Building Floodproofing: VIMS Eastern Shore Seawater Lab, VA
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Forecasts
Forecasting water levels, temperature, and precipitation helps mitigate impacts and plan resilient communities. Access a tide forecast & sea level projections for Virginia.

Adaptations
Case studies and story maps illustrate how adaptation works, and can be financed, through zoning, planning, engineering, and policy practices.

Tools
Tools assess risk and inform preparation and response to a changing environment. Access flood risk maps, shoreline recommendations, and an interactive comprehensive map of adaptation strategies.

Data
Adapt Virginia's comprehensive Geoportal provides easy and convenient ways to access, download, and share geospatial data. Search for data via map or search engine.

Planning & Policy
Management strategies from local and State code to socioeconomic issues and the Community Rating System. Learn about social vulnerability, relevant local ordinances, state legislation, and legal issues.

adaptva.org
Tools

FLOOD RISK

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss. Learn more about flooding and floodplains in maps, models, documents and websites.

Virginia's Flood Risk Information System

SHORELINE MANAGEMENT

What is the best management strategy for your shoreline?

Learn more

ADAPTVA INTERACTIVE MAP

View water levels, social vulnerability, infrastructure and natural capital in one viewer.

Launch Viewer
Gina Dicicco and Dave Dowling
Interactive Map

[Image of an interactive map showing various elements such as Sea Level Rise, Vulnerability, Risk, Infrastructure, Shoreline Management, Natural Resources, and a list of locations like Fire Station/EMS Station, Law Enforcement, Rescue Squad, Hospital/Medical Center, Church, Airport, Post Office, School, Technical/Trade School, College/University, Prison/Correctional Facility, Cemetery, Parishes (areas of 10-180 and below), and Road Centers.]
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adaptva.org
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Data

Explore maps and get the data that illustrate conditions pertaining to inundation, natural resources, infrastructure, and demographics.

GEOPORTAL

The Geoportal provides easy and convenient ways to access and share geospatial data.

Geoportal

A geoportal is a type of web portal used to find and access geographic information (geospatial information) and associated geographic services (display, editing, analysis, etc.) via the Internet.
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adaptva.org
Planning & Policy

Adaptations to climate change include planning and policy actions. Often called non-structural, these activities include comprehensive planning, zoning and building codes, insurance and the community rating system.

Are you a local manager who is looking for information and ideas to implement? Do you need guidance on how to qualify your community for the Community Rating System? Are you simply looking for examples of building codes that have been successfully adopted in other communities? You will find answers here.

Social Vulnerability

Social vulnerability is the capacity to recover from national or man-made disasters, based on social or economic community characteristics. Combined with physical risk of disasters (e.g., probability of flooding), it determines the overall ability of a community to withstand a given disaster.

The National Flood Insurance Program's Community Rating System (CRS) is a voluntary, incentive-based program that rewards localities that implement adaptive floodplain management standards, such as green infrastructure, by providing flood insurance policyholders with premium reductions.

Legal Authorities and Analyses

The Virginia Coastal Policy Center, William and Mary Law School (WCL) and Wetlands Watch have produced reports and collaborated on products addressing flooding from a policy and legal perspective.

Search Local ordinances
State Legislation and Provisions
VCPC Reports
SOCIAL VULNERABILITY

Virginia Vulnerability Viewer

Sarah Stafford – Director, Thomas Jefferson Program in Public Policy
Community Rating System

Known as the CRS, the Community Rating System is a FEMA program that incentivizes a strong floodplain management program by offering discounts on flood insurance rates for all policyholders within that community. Communities can gain points by adopting various floodplain management activities. Total points correspond to different ratings (also known as classes), which in turn correspond to discount percentages on flood insurance. With ratings from 10 to 1 (10 being the worst rating and 1 being the best), communities can earn up to a 45% discount on flood insurance for all policyholders. With every rating improvement, discounts for policyholders in the Special Flood Hazard Area increase in increments of 5%.

Click here for the website of the Coastal Virginia CRS Workgroup

Mary-Carson Stiff and Skip Stiles
FLOOD PROTECTION PAY-OFFS
A LOCAL GOVERNMENT GUIDE TO THE COMMUNITY RATING SYSTEM

Lead Author: Shannon Hulst Jarbeau, CFM
Contributing Author: Mary-Carson Stiff, JD, CFM

Review Draft
VCPC Reports & Partner Documents

Sea Level Rise & Recurrent Flooding

Projections based on historical trends as well as climate data suggest that parts of coastal Virginia are particularly at risk of sea level rise and recurrent flooding. This change could potentially disrupt coastal ecosystems and human development, but forward-thinking governance may mitigate loss of life and property. The following papers discuss Virginia localities' options and abilities to respond to flooding risks:

Strategic Planning for Sea Level Rise and Recurrent Flooding

These papers discuss current and future ideas for adapting to sea-level rise and recurrent flooding in Virginia, detailing legal frameworks and paths to a more resilient coastline, as well as the economic costs associated with lack of planning:

- Money for Nothing: Leveraging Donated Property to Satisfy Federal Grant Match Requirements (Click here to view report appendices)
- Tools for a Resilient Virginia Coast: Designing a Successful TDR Program for Virginia’s Middle Peninsula
- Cost of Doing Nothing: Economic Consequences of Not Adapting to Sea Level Rise in the Hampton Roads Region
- Hampton Roads Intergovernmental Pilot Project: Memo and Legal Primer
- Tidal Wetlands Protection in Virginia: Time for an Update (.pdf)
- Adaptive Planning for Flooding and Coastal Change in Virginia: State and Local Areas of Action (.pdf)
- Using Zoning Tools to Adapt to Sea Level Rise (.pdf)

Potential Liability of State and Local Government

Elizabeth Andrews – Director, Virginia Coastal Policy Center
## COUNTY ORDINANCES

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