Funding and Financing

Strategies for Integrated Hazard Mitigation and Water Resource Plans

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ENVIRONMENTAL FINANCE CENTER

BENEFITS OF
INTEGRATED HAZARD MITIGATION AND WATER RESOURCE PLANNING

Community benefits:

- Streamline community priorities
- Create support for a broader range of actions
- Minimize hazard impacts
- Improve the natural environment
- Efficiently address water quality mandates
- Increase community resilience

Financial benefits:

- Streamline resource allocation
- Coordinate available project funding
- Leverage different funding sources
- Scale projects
- Potentially shift from funding to financing

TYPICAL PLANNING PROCESS

Identify Issues → Set Goals and Objectives → Collect Data and Evaluate Strategies → Propose Solutions → Adopt Plan

Implementation

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Implementation

PLANNING PROCESS

INTEGRATED HAZARD MITIGATION AND WATER RESOURCE PLANNING

Identify Issues

- Flooding
- Extreme Storms
- Drought
- Extreme Heat

Set Goals and Objectives

- Hazard Mitigation
- Water Quality
- Water Quantity
- Improve Services
- Increase Equity

Collect Data and Evaluate Strategies

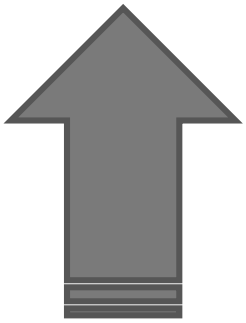
- Climate Risks
- Vulnerabilities
- Growth Trends
- Infrastructure Solutions

Propose Solutions

- Synthesize issues
- Define goals
- Recommend solutions

Adopt Plan

- Public Engagement
- Comment Period
- Council Review



Integrate Finance and Funding into Planning Strategies

INCORPORATING FINANCE INTO INTEGRATED PLANS

Step 1: Identify costs and develop a budget

- Identify overlapping strategies and interventions
- Consider the types of costs for each planned intervention
  - Capital
  - Labor
  - Operations and maintenance
- Develop a comprehensive budget and well long-term budget projections

INCORPORATING FINANCE INTO INTEGRATED PLANS

Step 2: Identify benefits in your plan and conduct a benefit-cost analysis

- Assess qualitative and quantitative benefits of strategies
- Consider potential funder guidelines for benefit valuation
- Compare future project benefits to implementation costs
- Consider doing a “total cost benefit analysis”

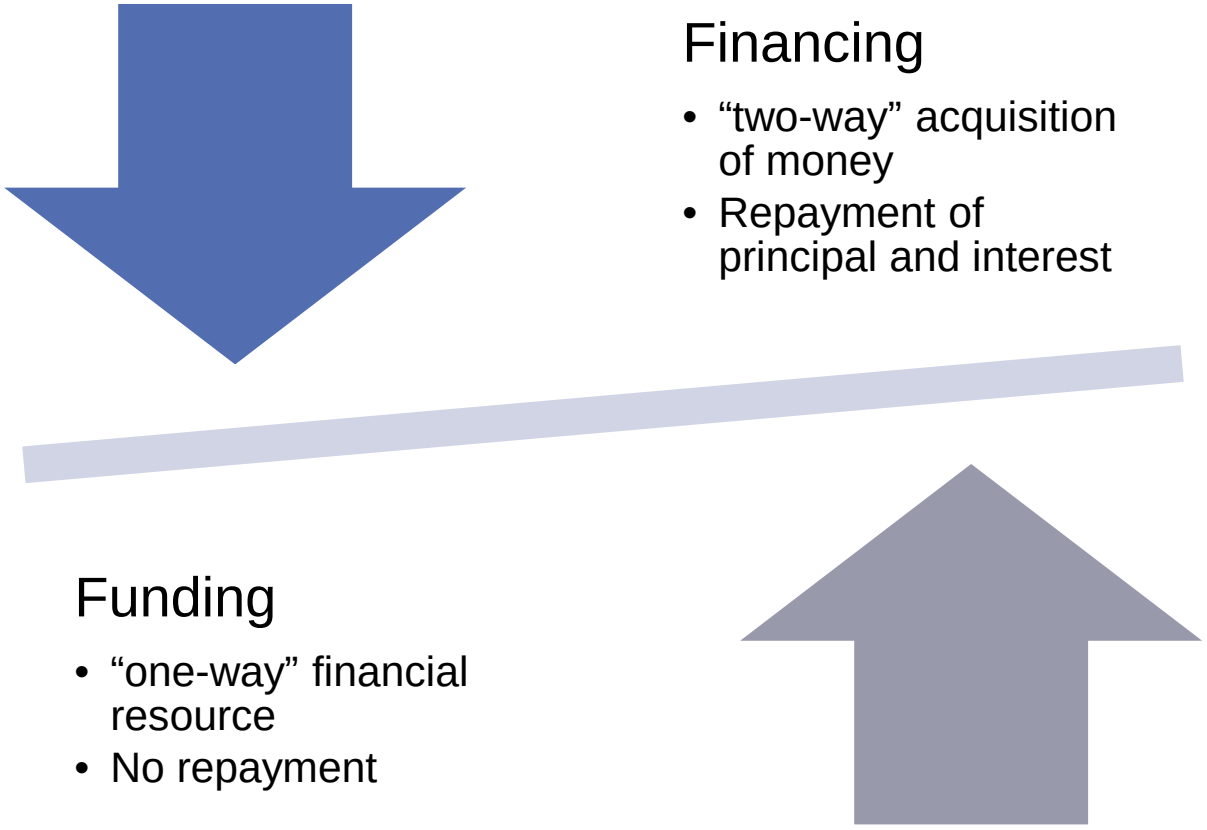
INCORPORATING FINANCE INTO INTEGRATED PLANS

Step 3: Prepare and incorporate funding strategy in the plan

- Consider a variety of funding and financing strategies
- Understand how funding sources can, and cannot, be combined
    - Understand the alternatives available to your community for cost share under “2 CFR § 200.306 - Cost sharing or matching” and be aware of requirements such as documentation of the match.
- Identify available clearinghouses for your state’s grants and loans
- Identify potential funding gaps

DEVELOPING A BALANCED STRATEGY

FUNDING AND FINANCE



Financing

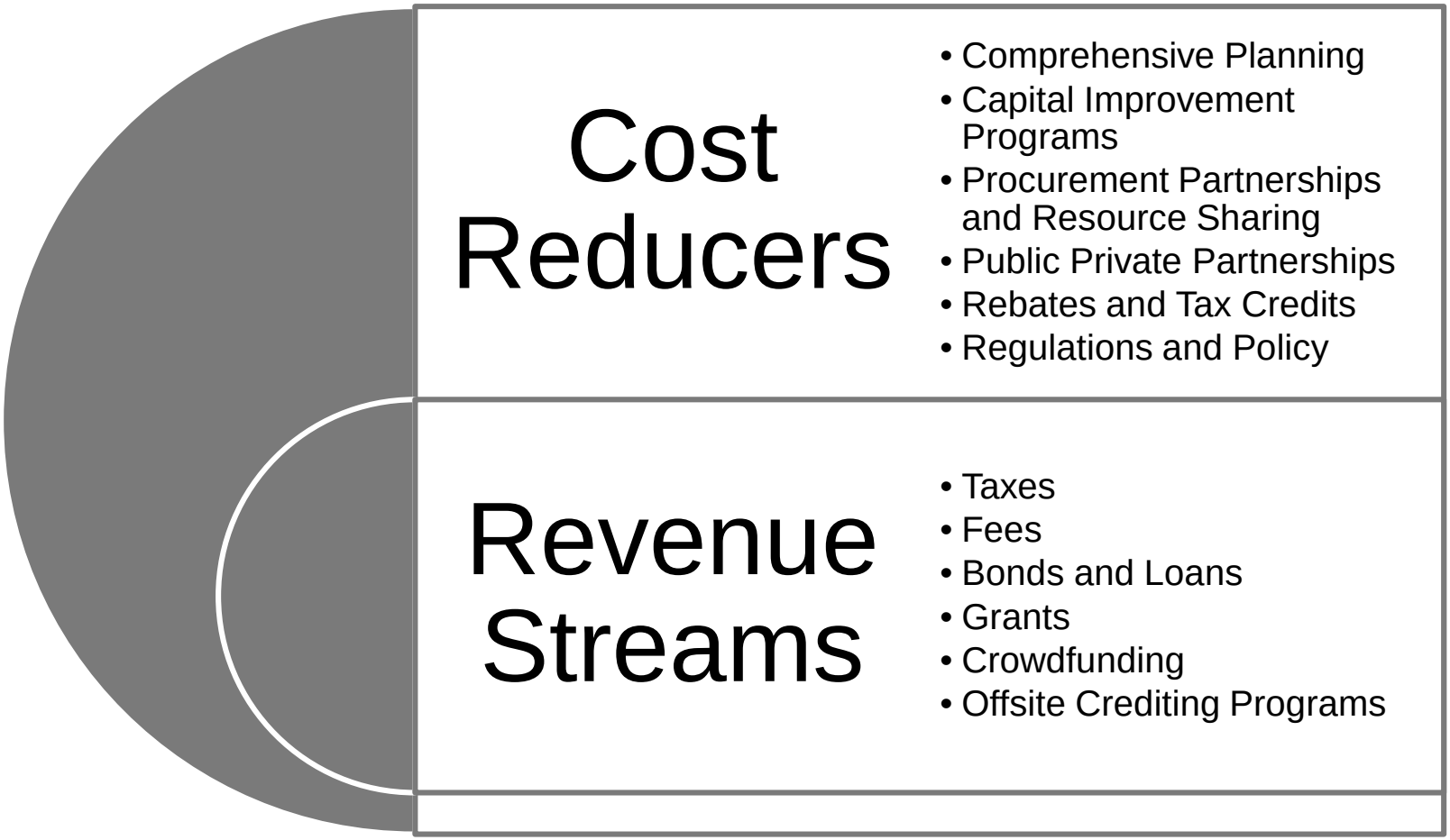
- “two-way” acquisition of money
- Repayment of principal and interest

Funding

- “one-way” financial resource
- No repayment

DEVELOPING A BALANCED STRATEGY

COST REDUCERS AND REVENUE STREAMS



COST REDUCERS

Strategies to increase a program's efficiency and reduce its overall costs.

COST REDUCERS

COMPREHENSIVE PLANNING

Benefits	Challenges	Ideal Use
• Helps to identify priorities • Codifies community's long-term commitment • Establishes strategy for achieving goals • Opportunity to engage community stakeholders • Coordinates departmental efforts	• Requires advanced coordination and commitment from leadership • Does not provide direct revenue for implementation • May require state enabling legislation	• Setting broad goals • Outlining commitment to integrated hazard and water management • Identifying cross departmental co-benefit strategies

COST REDUCERS

COMPREHENSIVE PLANNING

- **Washington 1990 Growth Management Act (GMA)**
  - Cities and counties must develop a comprehensive plan to manage growth
  - Land use elements in the plan set the direction of future growth
- **Maryland 1997 Smart Growth Legislation**
  - Focused on incentives rather than regulations
  - Encourages investment in urbanized areas and the preservation of open space

GMA Goals (RCW 36.70A.020)		
• Concentrated urban growth	• Economic development	• Early and continuous public participation
• Sprawl reduction	• Property rights	• Public facilities and services
• Regional transportation	• Permit processing	• Historic preservation
• Affordable housing	• Natural resource industries	• Shoreline management (RCW 36.70A.480)
	• Open space and recreation	
	• Environmental protection	

Source: MRSC

Downtown Frederick has benefited from smart growth tools and investments
Source: Preservation Maryland

COST REDUCERS

CAPITAL IMPROVEMENT PROGRAM

Benefits	Challenges	Ideal Use
• Aligns community priorities with long-term capital funding plan • Increases efficiency • Overall cost benefits • Incorporates GI into other projects such as utilities, schools and parks • Establishes criteria for CIP project funding that prioritizes hazard mitigation and water resources	• Requires more coordination and collaboration among departments • May require training government leaders and staff to think about integrating hazard mitigation into other local planning	• Setting specific requirements for capital improvements • Identifying projects with multiple co-benefits • Coordinating project outcomes across departments

COST REDUCERS

CAPITAL IMPROVEMENT PROGRAM

- **Prince George's County, MD**
  - County ordinance incorporates environmental site design into road, trail, sidewalk, and transit projects to ensure that stormwater runoff is well-managed and that they are safe for all users (Complete Streets)
  - In July 2014, Capitol Heights became the first of Prince George County's municipalities to officially adopt a Complete Streets policy.
- **State of Vermont**
  - Municipal planning and capital improvements will incorporate the use of a river corridor tool and a road infrastructure tool designed to identify sites most vulnerable to flood damage

Green street design for Capitol Heights
Source: Capitol Heights Green Streets Master Plan

COST REDUCERS

COOPERATIVE PROCUREMENT AND INTER-LOCAL RESOURCE SHARING

- **Minnesota Watershed Districts**
  - Holistic approach to water protection using watersheds as planning boundaries
  - Watershed districts have provided cost-share funding to cities, counties and other entities for stormwater management practices

Planned rain gardens in neighborhood of Rice Creek Watershed District
Source: SE White Bear Retrofit Analysis

Benefits

- Reduced costs for goods or services
- Reduced administrative burden
- Exchange and share resources and technical information

Challenges

- Legal compliance concerns when working with multiple entities
- May contradict “Buy local” policies
- Identifying an appropriate lead
- Aligning procurement values
- Limits competition

Ideal Use

- General and reoccurring needs such as office supplies, fuel, and technical services
- Aggregating shared service needs and purchasing preferences across jurisdictions
- Equipment or facility needs shared by neighboring jurisdictions

COST REDUCERS

PUBLIC PRIVATE PARTNERSHIPS

Benefits	Challenges	Ideal Use
• Leverages public capital to incentivize private investment • Shared risk between public and private sector • Shared responsibility can increase project efficiencies • Potential cost and time savings	• Rigorous request for proposal process can limit opportunities for smaller firms • Requires large-scale projects • Perceived or actual loss of public control • Long-term deals can constrain policymaking options for decades • Requires commitment to monitoring and evaluation • Benefits are highly speculative	• Large-scale infrastructure or operation and maintenance projects • Project should have limited and quantifiable risk • Projects with a realistic chance for a positive revenue stream • Projects with well-defined shared vision of what success looks like • Projects that are complex or require innovative technology solutions

COST REDUCERS
PUBLIC PRIVATE PARTNERSHIPS

- **Clean Water Partnership, Prince George's County, MD**
  - CBP3 between Prince George's County MD and Corvias Solutions
  - Designed to address investment in stormwater management, as well as community and workforce development
  - Stormwater utility fees fund multi-year agreement with Corvias Solutions to manage the County's infrastructure investments

Greenbelt Raingarden
Source: The Clean Water Partnership

COST REDUCERS

INCENTIVES - REBATES AND TAX CREDITS

Benefits	Challenges	Ideal Use
• Way to incentivize the purchase of new technology, service, or practice • Speaks to businesses and individuals self-interest • More politically feasible than increasing taxes • Leverages private investment to achieve community goals	• One-time funds related to specific purchases • Typically offsets only a portion of the cost • Difficult to determine additionality	• Encourage, limit, or manage growth • Promote a specific technology or practice • Part of a coordinated outreach strategy to mobilize resident action

COST REDUCERS

INCENTIVES - REBATES AND TAX CREDITS

- **West Chester, PA**
  - Stream Protection Fee
  - Incentives (credits and rebates) for property owners who install and maintain stormwater management practices on their properties
- **Anne Arundel County, MD**
  - Stormwater Remediation Fee and a Stormwater Property Tax
  - Property owners receive credits towards both if they implement practices on their properties
- **The Community Rating System (CRS) of FEMA's National Flood Insurance Program (NFIP)**
  - Residents obtain increased discounts on their flood insurance premiums based on the increased amount of hazard mitigation activities they implement

COST REDUCERS

REGULATIONS AND POLICY

Benefits	Challenges	Ideal Use
• Embed goals into new projects • Minimize maintenance cost to the municipality • Puts benefit and costs onto the developer • Environmental and societal benefits as a result of improvements	• Local regulatory approach preferences • Maintaining updated and adaptable requirements • Staff capacity and knowledge • Public awareness and enforcement • May require state enabling legislation	• Encourage, limit, or manage growth • Require specific standards • Engage private sector

COST REDUCERS
REGULATIONS AND POLICY

- **Montgomery County, MD**
  - 2014 Tree Canopy Law - Permit applicants must satisfy mitigation requirements based on the area within the limits of disturbance
    - Planting trees on the property OR
    - Paying fee-in-lieu into a dedicated account.
  - 2014 Roadside Tree Protection Law - Permit applicants must have an approved plan to protect critical root zones of roadside trees and, if a tree is removed
    - Plant one replacement roadside tree at or near the location of the removed tree AND
    - Pay for two additional roadside trees.

REVENUE STREAMS

Mechanisms to generate and access capital for project implementation.

REVENUE STREAMS

TAXES, ASSESSMENTS, AND SPECIAL DISTRICTS

- **General Funds**
- **New taxes or special assessments**
  - Enterprise funds
- **Tax Increment Financing Districts or Special Improvement Districts**

Benefits

- Taxes are consistent from year-to-year and use an existing funding system
- Taxes can be earmarked for a specific service provided

Challenges

- Taxes can be unpopular and revenue generated is typically not allocated to a specific cause
- Some general taxes may impose a larger cost burden on low-income people

Ideal Use

- Operations and Maintenance
- On-going programs
- Small infrastructure projects
- Limited access to debt

REVENUE STREAMS

TAXES, ASSESSMENTS, AND SPECIAL DISTRICTS

- **Fairfax County, VA**
  - Implemented a stormwater tax in 2010 which assessed 1 cent per $100 of property value on properties within a designated assessment district
  - The tax is currently assessed at 3.25 cents per $100 of assessed real estate value

Restored streambed in Fairfax Co
Source: Fairfax Co Govt

REVENUE STREAMS

FEES

- **Permit Fees**
- **Utility Fees**
- **Impact Fees**
- **Fee In-lieu**

Benefits

- Fees are allocated to a specific service provided
- Fees are often easier to adopt than taxes
- Can help support projects with on-going maintenance needs

Challenges

- Fees may not generate sufficient funds and require administrative capacity for assessing and collecting

Ideal Use

- Discrete use case
- Project provides a direct community service

REVENUE STREAMS
FEES

- **Northhampton, MA**
  - Stormwater and Flood Control Utility in 2014 supported by a new fee
  - Fee is based on average runoff for single-family, two-family and three-family homes
- **Missouri**
  - Funds stream restoration projects with a mitigation requirement for developers that impact streams

Source: Northampton Gov

REVENUE STREAMS

DEBT- BONDS AND LOANS

- **Bonds**
  - Municipal
  - Green
  - Impact
- **State Revolving Funds**

Benefits

- Can support large-scale shovel-ready projects
- Provides a steady funding stream over time that can help smooth out expenses and create a more predictable cash flow
- Low-interest financing
- Allows you to save time and build capital projects sooner by borrowing up-front

Challenges

- Requires full repayment plus interest
- May require voter approval
- Contingent on credit record
- Limited in scope, typically on suitable for large-scale shovel-ready infrastructure projects
- Can require capacity for meeting reporting requirements
- Increased risk as future revenues may change

Ideal Use

- Large-Scale Shovel-Ready Projects
- Infrastructure Projects With A Revenue Stream
- Municipalities with Good Credit

REVENUE STREAMS

DEBT – BONDS AND LOANS

- **California Infrastructure and Economic Development Bank (2019)**
  - $83.9 Million in Green Bonds
  - Financial assistance to 8 local governments for safe drinking water projects
- **Virginia Clean Water State Revolving Loan Fund (2019)**
  - $20 million in funding
  - Purchase and protection of 22,856 acres in Southwest Virginia

REVENUE STREAMS

GRANTS

- **Federal**
- **State**
- **Regional**
- **Local**
- **Foundations**
  - Private
  - Nonprofit
  - Community

Benefits

- Does not require repayment
- Widely available for various projects

Challenges

- Competitive and limited in availability
- Often project specific and time-constrained
- Can require match and capacity for meeting reporting requirements

Ideal Use

- Discrete mid-to-small projects
- Pilot projects
- As part of a larger capital stack
- Outreach and education projects

REVENUE STREAMS

GRANTS

Overview of Federal Funding and Technical Assistance Programs

	Green Infrastructure	Natural Infrastructure	Urban Focus	Habitat Restoration	Flood Prevention	Water Quality	Pollution Abatement	Disaster Mitigation
EPA Building Blocks for Sustainable Communities	■		■		■	■		
EPA Clean Water Act Nonpoint Source Grant (Section 319)	■	■		■			■	
EPA Clean Water State Revolving Fund (CWSRF)	■	■		■			■	
EPA Great Lakes Restoration Initiative (GLRI)	■	■		■				
EPA Greening America's Communities Program	■		■		■			
EPA Superfund Redevelopment Initiative (SRI)		■		■	■		■	
EPA Urban Waters Small Grants Program (UWSG)	■		■	■	■	■	■	
FEMA Flood Mitigation Assistance (FMA) Grant					■			■
FEMA Pre-Disaster Mitigation (PDM) Grant Program	■			■	■			■
HUD Community Development Block Grant (CDBG)	■	■	■		■			
NOAA Community-based Restoration Program		■		■				
USDA Urban and Community Forestry (UCF) Program		■	■	■	■			
USFWS (U.S. Fish & Wildlife Service) Coastal Program		■		■				

Attributes of Federal Funding and Technical Assistance Sources

REVENUE STREAMS
CROWDFUNDING

Benefits	Challenges	Ideal Use
• Does not require repayment • Appropriate for pilot projects or test concepts • Promotes civic engagement and raises awareness • Can be used as match	• Requires capacity to develop and manage an effective campaign • Can be unpopular if government already collects taxes or fees associated with project goal • Raises only small amounts of funds	• Matching funds • Projects with a strong community outreach component • Small discrete projects

REVENUE STREAMS
CROWDFUNDING

- **Ioby (in your back yard), CT**
  - Ioby crowdfunding platform (ioby.org) helps connect local leaders with support and funding from their communities
  - Sustainable CT and ioby are partnering to offer the Sustainable CT Community Match Fund as a flexible funding mechanism for sustainability projects in Connecticut

Source: Sustainable Connecticut

REVENUE STREAMS
OFFSITE CREDITING PROGRAMS

- **Minneapolis, MN**
  - Capitol Region Watershed District allows developers to purchase or sell credits for ongoing projects
  - Developers in fully developed downtown areas purchase credits that contribute to green infrastructure projects in other less developed locations
- **Saw Mill Creek Watershed, NYC**
  - The restoration of Saw Mill Creek watershed and wetlands was determined as a priority in the aftermath of Hurricane Sandy.
  - Restoration is funded by the purchase of credits by developers whose projects have environmental impacts on the city waterfront.

Minneapolis rain garden maintenance
Source: Capitol Region Watershed District

Rendering of Saw Mill Creek wetland in the future
Source: Waterfront Alliance

BLENDED FINANCE

Case studies of combining multiple finance and funding sources.

BRIAR CREEK BUYOUT AND FLOODPLAIN RESTORATION

CHARLOTTE, NORTH CAROLINA

Problem

- Two apartment complexes experienced four devastating flooding events between 1995 and 2008
- Future flood damages would be 400% higher than the cost of a buy out
- Needed to address non-point source pollution

Solution

- Mecklenburg County purchased and demolished apartments
- The floodplain and stream channels were restored

Chantilly Ecological Sanctuary conceptual design
(Photo source: City of Charlotte)

BRIAR CREEK BUYOUT AND FLOODPLAIN RESTORATION

CHARLOTTE, NORTH CAROLINA

Total buyout cost $14.3 million = $9.7 (land purchase) + $4.6 (tenant relocation/demolition)		
FEMA Pre-Disaster Mitigation Grant	$8.9 million	62%
Charlotte-Mecklenburg Storm Water Services	$5.4 million	38%
Total floodplain restoration cost (stream, pond and wetland) = $4.55 million		
City Stormwater Utility Fees	$450,000	10%
City PCSO mitigation fees (fee-in-lieu)	$2.1 million	46%
County Utility Fees	$1.9 million	42%
NC Dept of Environment & Natural Resources 319 grant	$100,000	2%

BEE BRANCH WATERSHED FLOOD MITIGATION CITY OF DUBUQUE IOWA

Problem

- Community hit five times by flash floods between 1999 and 2010.
- 1,150 homes and business of the Bee Branch watershed were identified as especially vulnerable to severe flooding.

Solution

- 2001 drainage basin master plan
- 2003 a citizen advisory committee
- Two phase open channel restoration project
  - 2011 - Lower Bee Branch
    - large expanse of open water that wraps around a former industrial site, which will be privately redeveloped as a retail center, a multiuse hike/bike trail and a system of floating vegetated islands made of recycled plastic
  - 2017 - Upper Bee Branch Creek
    - 1,938-foot long creek and floodplain, a multi-use trail system, a play area, scenic overlooks, gardens and an outdoor amphitheater

Bee Branch Restored floodplain
(Photo source: City of Dubuque)

BEE BRANCH WATERSHED FLOOD MITIGATION CITY OF DUBUQUE IOWA

Total Cost = $219 million Funded and financed = $161 million	
Federal and State Funds	$52.9 million
State Sales Tax Increment Financing	$98.5 million
CW SRF (interest payment reallocation)	$9.4 million
Private Donations (America's River III)	$165,000

Federal and State Funds Breakdown	Amount funded
U.S. Dept. of Transport. Investment Generating Economic Recovery (TIGER) Grant	$5.60 mill
I-Jobs II Grant	$3.96 mill
River Enhancement Community Attraction and Tourism (RECAT) Grant	$2.25 mill
U.S. Department of Transportation National Scenic Byways Grant	$1.00 mill
State Recreational Trail Grant	$100,000
U.S. Economic Development Administration Disaster Relief Opportunity Grant	$1.22 mill
Dubuque Metropolitan Area Transportation Study (DMATS)	$940,000
U.S. EPA Clean Water State Revolving Fund (SRF) Green Project	$5.90 mill
HUD National Disaster Resilience Competition (NDRC) -	$31.50 mill
U.S. Environmental Protection Agency (EPA) Brownfield Cleanup Grants	$400,000

STATEWIDE HAZARD MITIGATION EFFORT
VERMONT

Problem

- Hurricane Irene in 2011

Solution

- 2012 started a buyout effort to purchase flood damaged and flood vulnerable
  - acquire and demolish close to 160 flood-vulnerable properties and complete approximately 70 infrastructure improvement projects
- 2019 Vermont State Hazard Mitigation Plan (SHMP) that emphasizes floodplain restoration.
  - Conserve critical areas and watershed functions so water can spread out to low-lying areas after heavy rainfall events

Greenway Trail Bridge in Cambridge, VT

(Photo source: Seth Jensen, LCPC featured in the Vermont State Hazard Mitigation Plan – 2018)

STATEWIDE HAZARD MITIGATION EFFORT
VERMONT

Cost Reducers :

- Community planning integrates hazard mitigation and water resource management
- Development regulations
- Incentivizing and promoting residential participation

Revenue Streams

- Federal and state programs, to include FEMA, Vermont Housing Conservation Board, Vermont's Ecosystem Restoration Grant Program, and more.
- Emergency Relief and Assistance Fund

FEMA	$20 million (since 2012)
HUD's Community Development Block Grants	$7 million
Vermont's Housing and Conservation Board	$2+ million

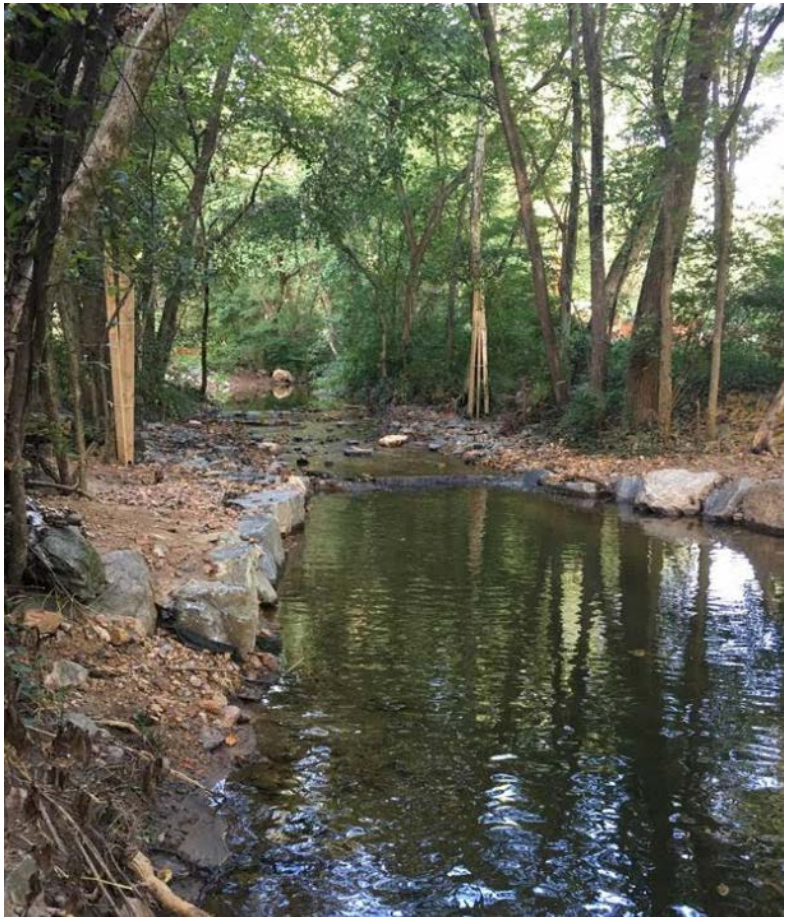
SLIGO CREEK WATERSHED
MONTGOMERY COUNTY, MD

Problem

- Uncontrolled stormwater from high density commercial and residential areas was eroding stream banks.
- 2000 study declared Sligo Creek biologically impaired

Solution

- Five phase regional effort between 1989 and 2007 included:
  - improving existing detention wet ponds and constructing new ones
  - restoring forest, stream and wetland habitats
  - installing low impact development stormwater management
  - implementing vegetated controlled practices and re-introducing native fish



Restoration site in Sligo Creek
(Photo source: Erin McArdle)

SLIGO CREEK WATERSHED
MONTGOMERY COUNTY, MD

$3 million (excluding monitoring costs) were invested in the upper Sligo Creek restoration effort	
Montgomery County capital budget	$1.8 million
Maryland Department of Environment's Small Creeks and Estuaries Reserve cost share program	$1 million
U.S. Army Corps of Engineers	$256,000

CONCLUSION

- **Consider funding options early in the planning process**
- **Diversify funding options by adopting integrated planning efforts**
- **Establish a portfolio of viable implementation projects.**
- **Evaluate and prioritize funding options**
- **Reduce costs by aligning efforts to avoid duplicating projects, integrating projects into the annual budgeting process, sharing resources and technical services across jurisdictions, leveraging private partners, offering incentives, and adopting strategic policy goals**
- **Identify funding and financing options that are available in your community**
- **Develop a blended finance strategy by mixing various funding and finance strategies to implement projects**