Coastal Resilience Grant Program

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CZM
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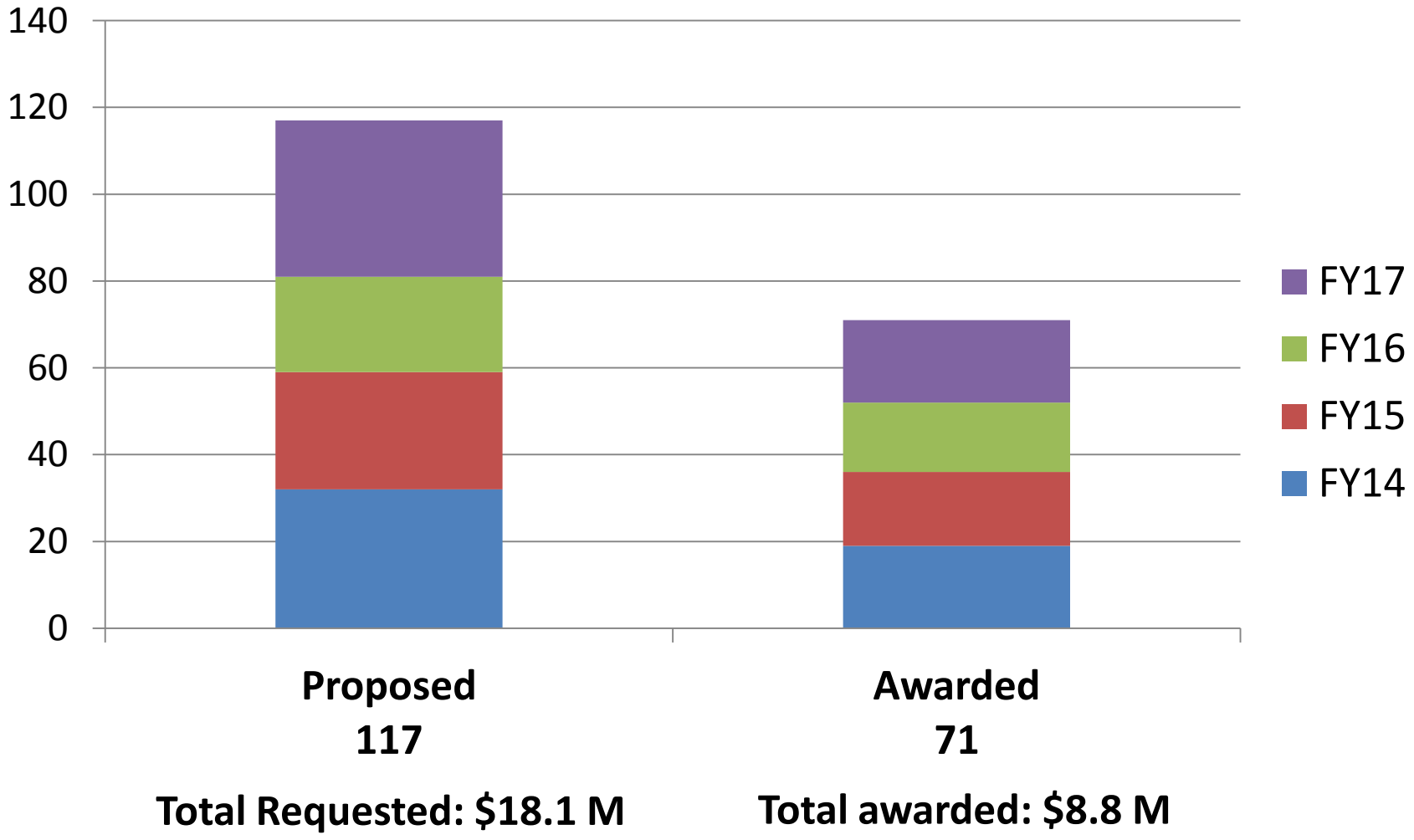
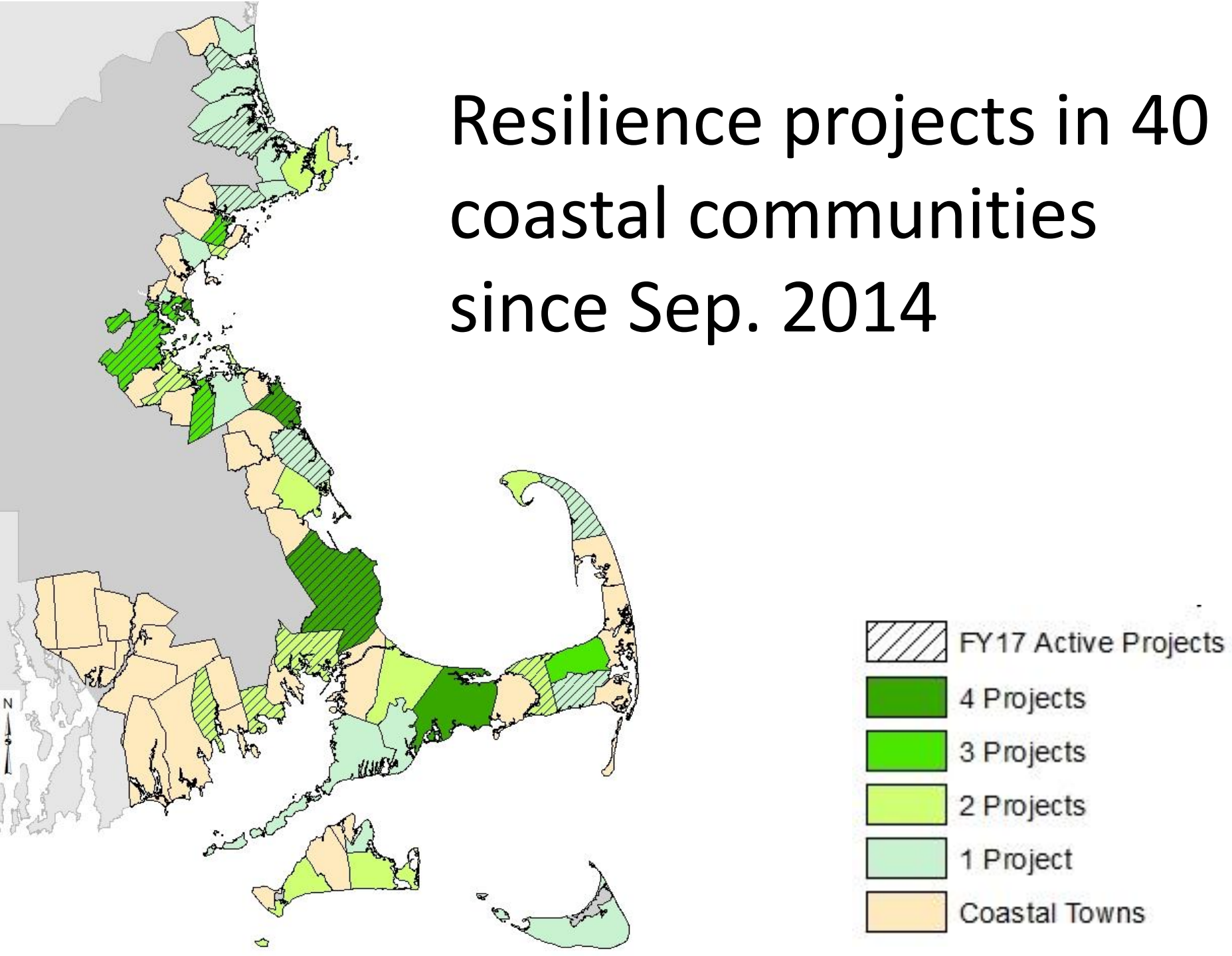
State Capital Funding Awarded

FY14 (2014)	$2.0 M
FY15 (2014)	$2.7 M
FY16 (2015)	$2.2 M
FY17 (2016)	$1.8 M

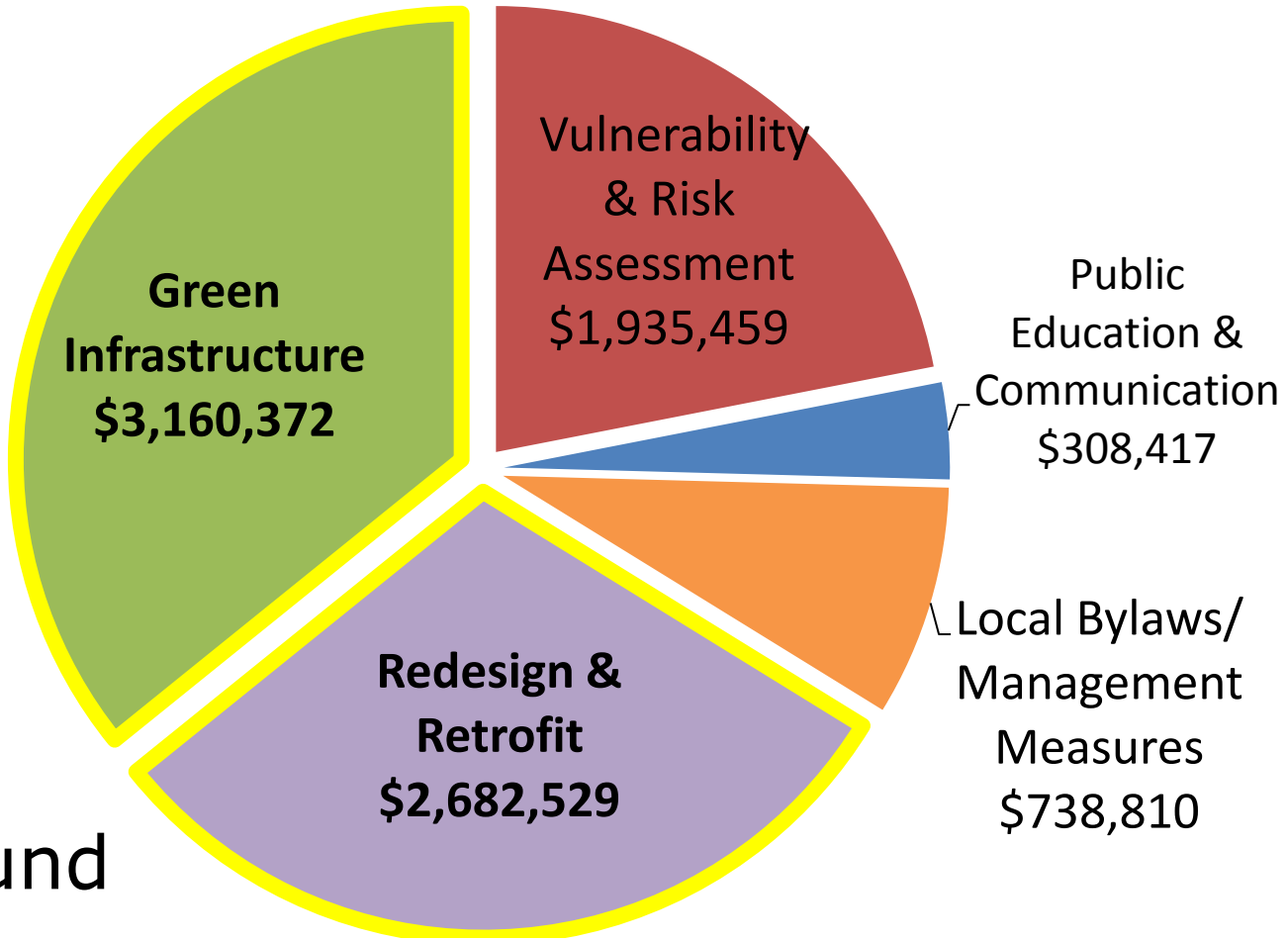
Demonstrated need for additional financing mechanisms



Resilience projects in 40 coastal communities since Sep. 2014

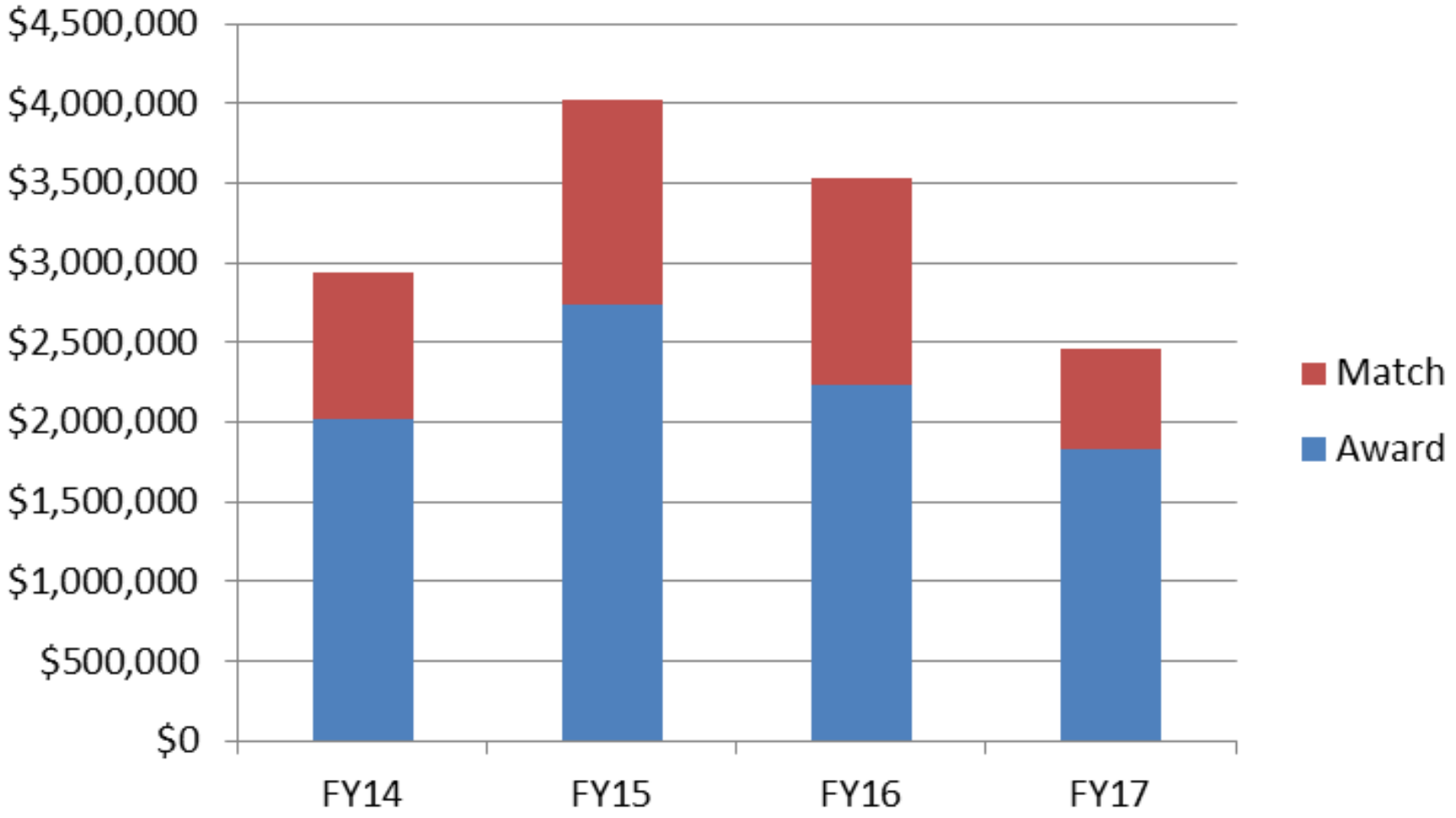


Communities taking action



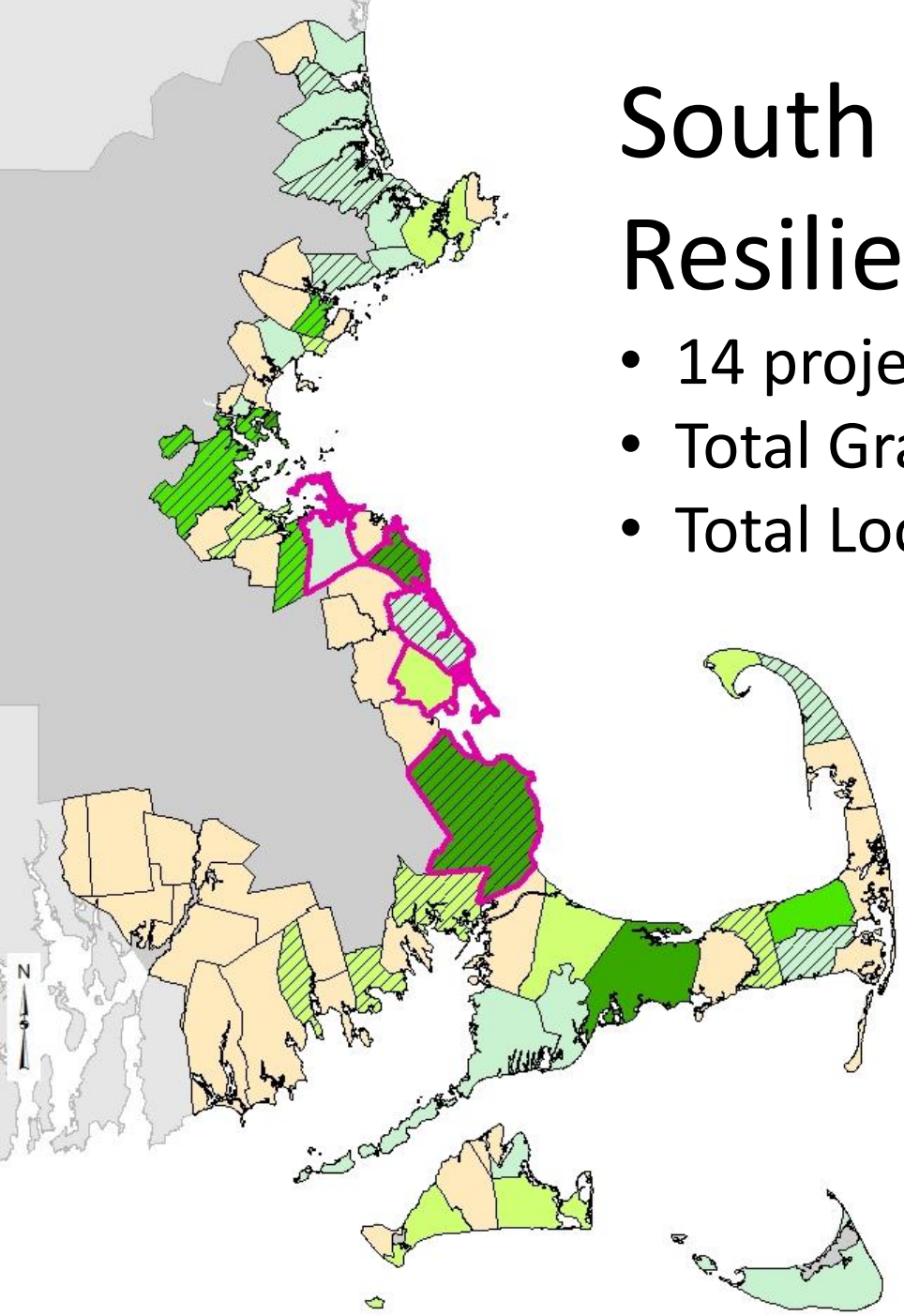
On-the-ground adaptation $5,842,901

Investing local staff time & other resources



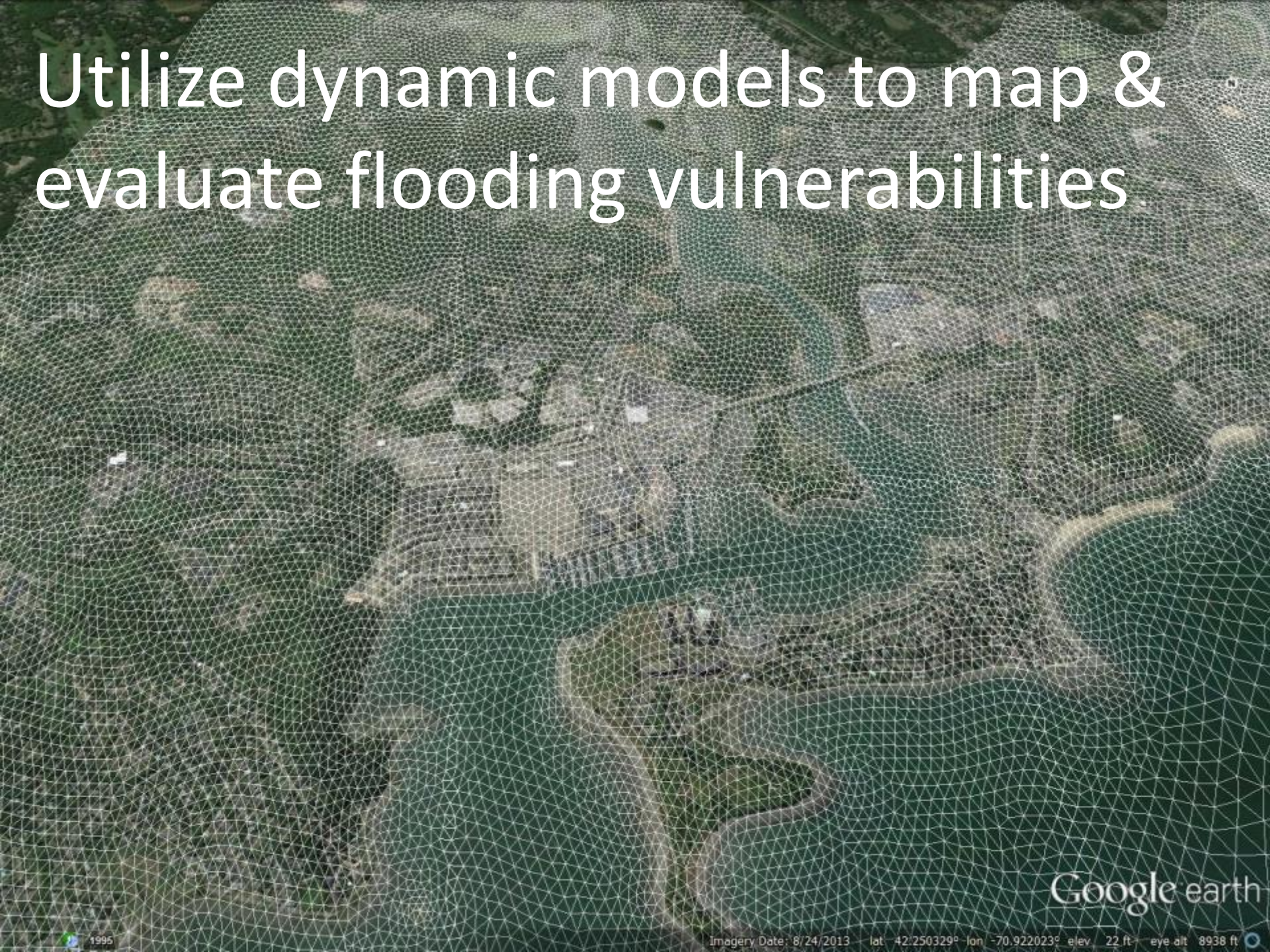
South Shore Resilience Projects

- 14 projects in 6 communities
- Total Grant Funds: **$1,676,590**
- Total Local Match: **$559,429**



Recipient	Project Title
Duxbury (FY15)	*Coastal Processes Study & Resiliency Recommendations for Duxbury Beach & Bay ($206,250)*
Duxbury Beach Reservation (FY14)	*Cobble Berm Restoration & Construction of Nurseries for Native Beach Grass Cultivation ($86,947)*
Hingham (FY14)	*Climate Change Vulnerability, Risk Assessment & Adaptation Study ($44,461)*
Hull (FY14)	*Gun Rock/Atlantic Ave. Storm Damage Adaptation Project ($41,250)*
Hull (FY15)	*Climate Change Vulnerability Assessment & Adaptation Planning ($45,339)*
Marshfield (FY17)	*Assessing Alternatives for Reducing Flooding Within Green Harbor River Estuarine System Through the Optimization of Tide Gates on Dyke Road ($71,250)*
Plymouth (FY14)	*Long Beach Restoration/Enhancement ($75,000)*
Plymouth (FY15)	*Cobble Nourishment of Washover Areas at Plymouth Long Beach ($279,080)*
Plymouth (FY16)	*Warren Cove Cobble Nourishment ($73,350)*
Plymouth (FY17)	*Evaluating Inlet Stabilization at Ellisville Harbor ($111,000)*
Scituate (FY14)	*North Scituate Beach Nourishment – planning, design ($118,000)*
Scituate (FY15)	*North Scituate Beach Nourishment – permitting ($241,163)*
Scituate (FY16)	*Assessing Coastal Erosion, Sediment Transport & Prioritization Management Strategy ($180,000)*
Scituate (FY17)	*Evaluating Roadway Elevation Improvements and Dune/Beach Nourishment along North Humarock Beach ($103,500)*

Utilize dynamic models to map & evaluate flooding vulnerabilities



Adaptive management of current & future vulnerabilities


Analyze coastal processes &
assess management alternatives

Evaluate roadway elevation improvements & nourishment alternatives

Redesign revetment and seawall to reduce storm damages

Available Resources

www.mass.gov/czm/stormsmart

- Coastal Resilience Grants
- Shoreline Change
- Coastal Structures Inventory
- Sea Level Rise Guidance
- StormSmart Communities
  - Pilot Projects
  - Publications
  - Funding Sources

StormSmart Coasts

StormSmart Properties Fact Sheet 4: Bioengineering - Coir Rolls on Coastal Banks

The coast is a very dynamic environment and coastal shorelines—especially beaches, dunes, and banks—change constantly in response to wind, waves, tides, and other factors such as seasonal variation, sea level rise, and human alterations to the shoreline system. Consequently, many coastal properties are at risk from storm damage, erosion, and flooding. Inappropriate shoreline stabilization methods can actually do more harm than good by exacerbating beach erosion, damaging neighboring properties, impacting marine habitats, and diminishing the capacity of beaches, dunes, and other natural landforms to protect inland areas from storm damage and flooding. StormSmart Properties—part of the Massachusetts Office of Coastal Zone Management's (CZM) StormSmart Coasts program—provides coastal property owners with important information on a range of shoreline stabilization techniques that can effectively reduce erosion and storm damage while minimizing impacts to shoreline systems. This information is intended to help property owners work with consultants and other design professionals to select the best option for their circumstances.

What Are Bioengineering and Coir Rolls?

Coastal bioengineering projects reduce erosion and stabilize eroding shorelines by using a combination of deep-rooted plants and erosion-control products made of natural, biodegradable materials, such as coir rolls. Coir rolls are cylindrical rolls that span 12 to 20 inches in diameter, are packed with coir fibers (i.e., coconut husk fibers), and are held together with mesh. The rolls are typically 10- to 20-feet long and can be stitched together to provide continuous shoreline coverage. In contrast, coir envelopes are coir fabric filled with sand. Coir envelopes have very different impacts and design considerations and should not be confused with coir rolls.

No shoreline stabilization option permanently stops all erosion or storm damage. The level of protection provided depends on the option chosen, project design, and site-specific conditions such as the exposure to storms. All options require maintenance, and many also require steps to address adverse impacts to the shoreline system, called mitigation. Some options, such as seawalls and other hard structures, are only allowed in very limited situations because of their impacts to the shoreline system. When evaluating alternatives, property owners must first determine which options are allowable under state, federal, and local regulations and then evaluate their expected level of protection, predicted lifespan, impacts, and costs of project design, installation, mitigation, and long-term maintenance.

Below: This coir roll has been planted wth vegetation prior to installation.

PHOTO BY WILKINSON ECOLOGICAL DESIGN

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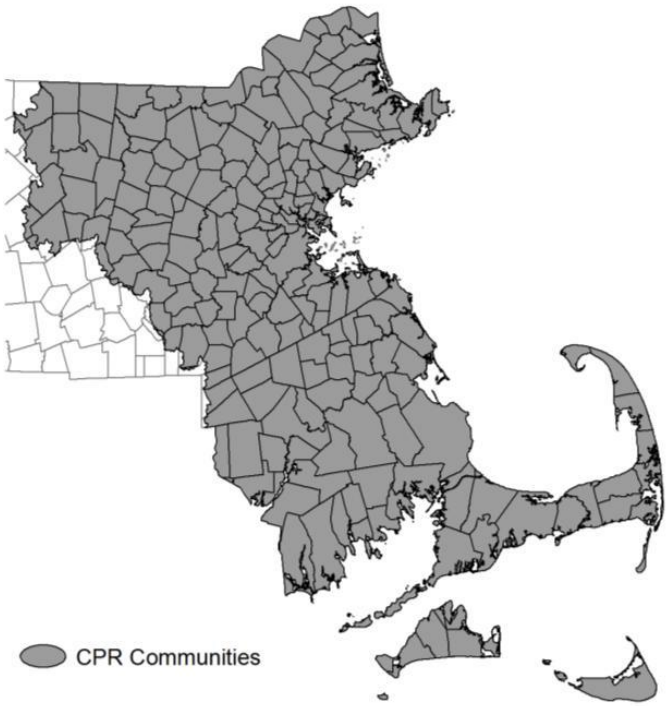
Other state grant programs

- **CZM Coastal Pollution Remediation Grants**
  address stormwater runoff pollution from roads, highways, or parking areas and boat waste from commercial vessels



- **EEA Dam and Seawall Repair or Removal Program**
  provides grants and loans to finance the repair, and removal of dams, levees, seawalls, and other forms of inland and coastal flood control

FEMA Hazard Mitigation Assistance

Mitigation Project	PDM	FMA	SRL	HMGP
1. Property Acquisition & Demolition or Relocation Projects				
Property Acquisition & Demolition or Relocation Projects	✓	✓	✓	✓
2. Construction Type Projects				
Property Elevation	✓	✓	✓	✓
Mitigation Reconstruction[1]			✓	
Localized Minor Flood Reduction Projects	✓	✓	✓	✓
Dry Floodproofing of Residential Property[2]		✓	✓	
Dry Floodproofing of Non-Residential Structures		✓		
Stormwater Management	✓	✓		✓
Infrastructure Protection Measures	✓			✓
Vegetative Management/Soil Stabilization	✓			✓
Retrofitting Existing Buildings & Facilities (Wind/Earthquake, etc.)	✓			✓
Safe Room Construction	✓			✓
3. Non-Construction Type Projects				
All Hazard/Flood Mitigation Planning	✓	✓		✓

1. The SRL program allows Mitigation Reconstruction projects located OUTSIDE the regulatory floodway or Zone V as identified on the effective Flood Insurance Rate Map (FIRM), or the mapped limit of the 1.5-foot breaking wave zone. Mitigation Reconstruction is only permitted if traditional elevation cannot be implemented.
2. The residential structure must meet the definition of "Historic Structure" in 44 CFR § 59.1

** Source: Table 1-1: HMA Eligible Projects, FEMA 2009 Unified HMA Program Guidance (See Section 2.3 [Mitigation Project Subapplication Guidance] and Section 2.4 [Mitigation Planning Subapplication Guidance] for details.*

www.mass.gov/czm/stormsmart > StormSmart Communities > Funding Sources