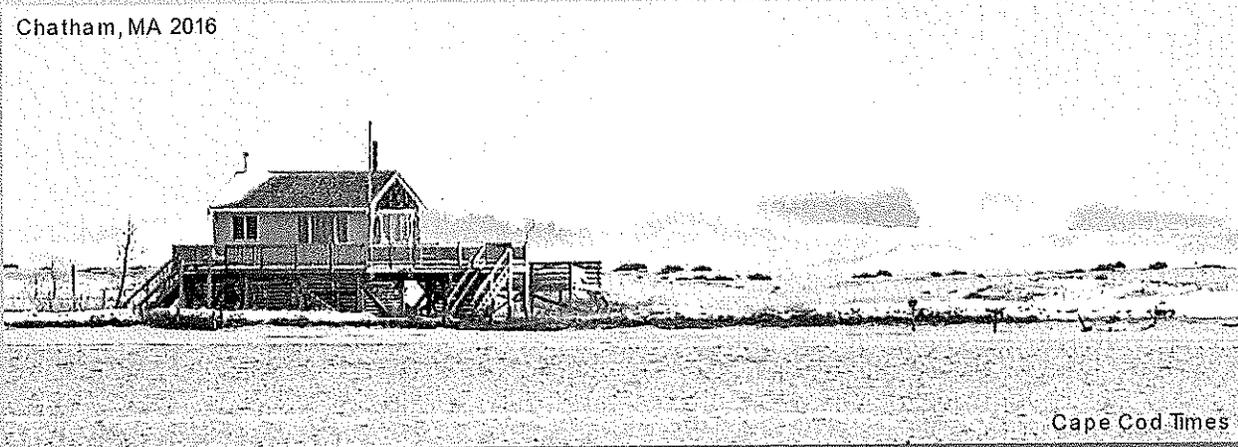


COASTAL RESILIENCY ON CAPE COD

CALLY HARPER, PhD, CFM

Chatham, MA 2016



Cape Cod Times



CAPE COD
COMMISSION

BUILDING A RESILIENT* CAPE COD

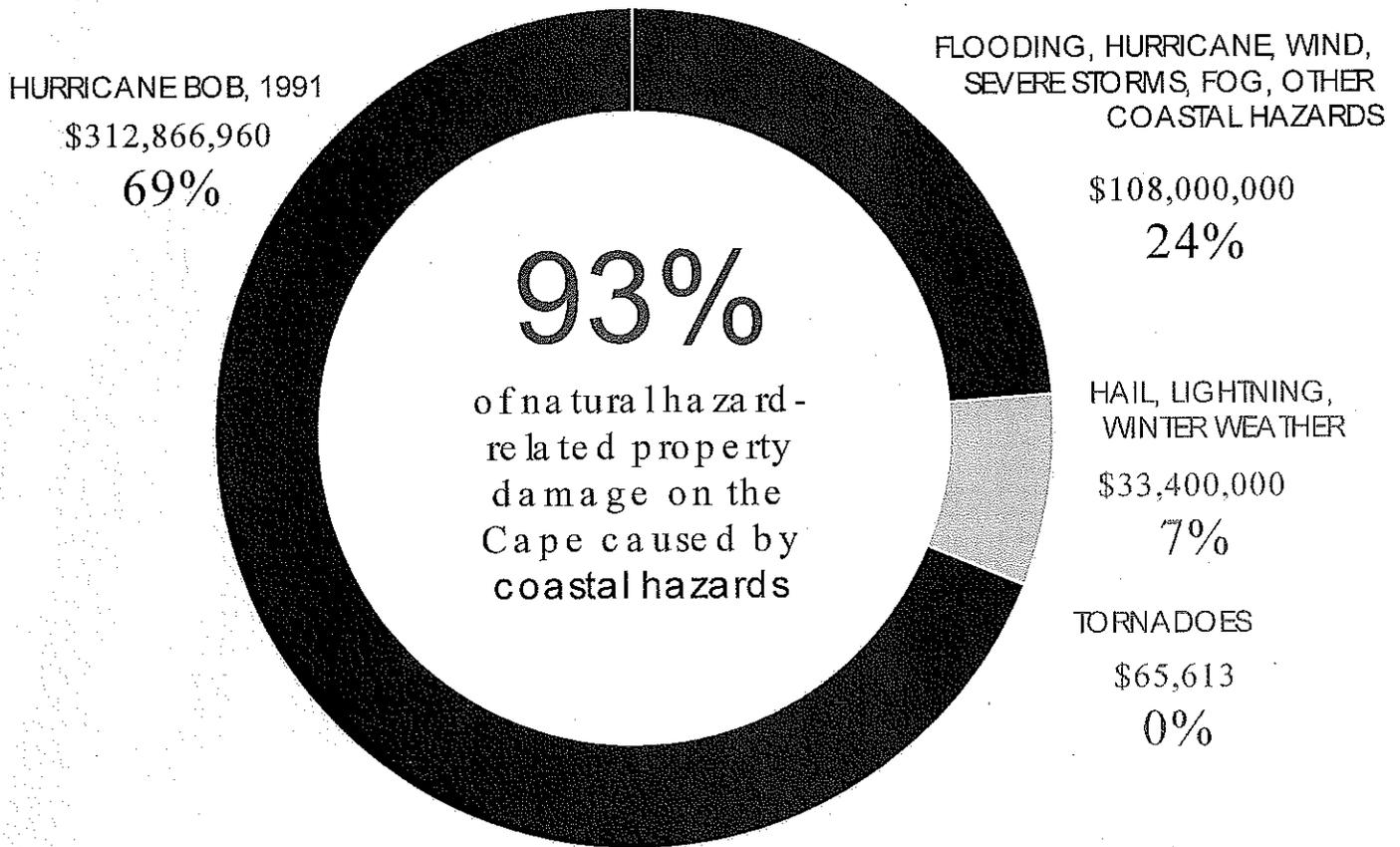
*re · sil · ie n c e

the ability of a community to 'bounce back' after hazard events, such as hurricanes, coastal storms, and flooding – rather than simply reacting to impacts.



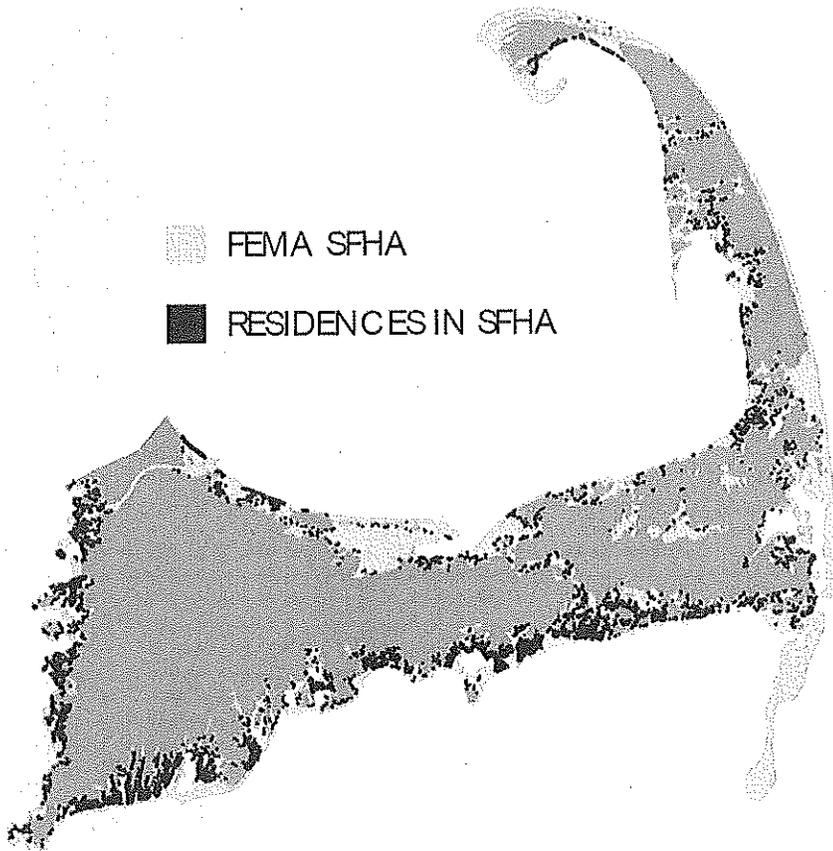
Superstorm Sandy, November 2012.

WE HAVE A HISTORY OF DAMAGE FROM COASTAL STORMS



Source: SHELDIS, University of South Carolina

OUR COASTAL HOMES ARE AT RISK



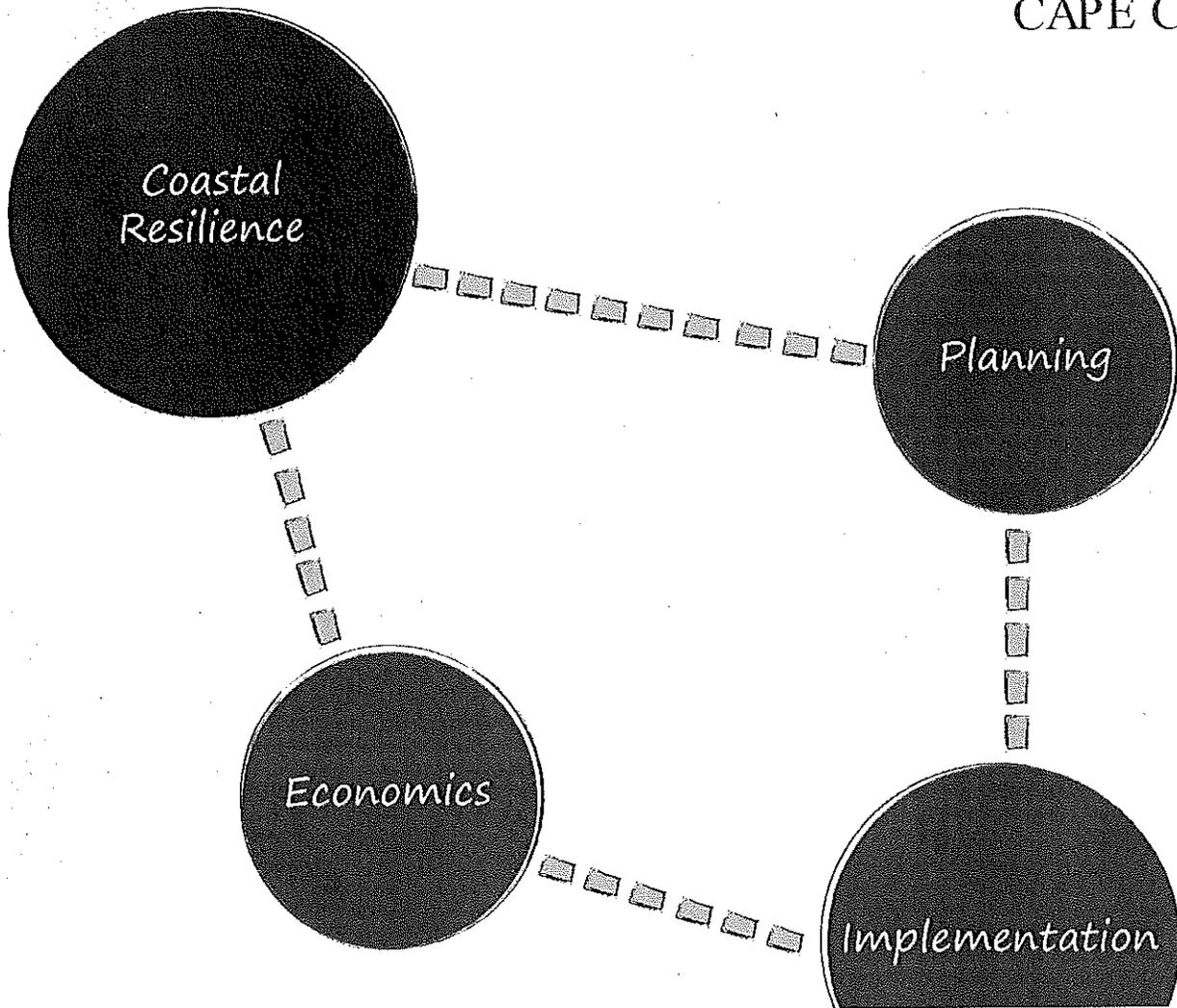
■ FEMA SFHA

■ RESIDENCES IN SFHA

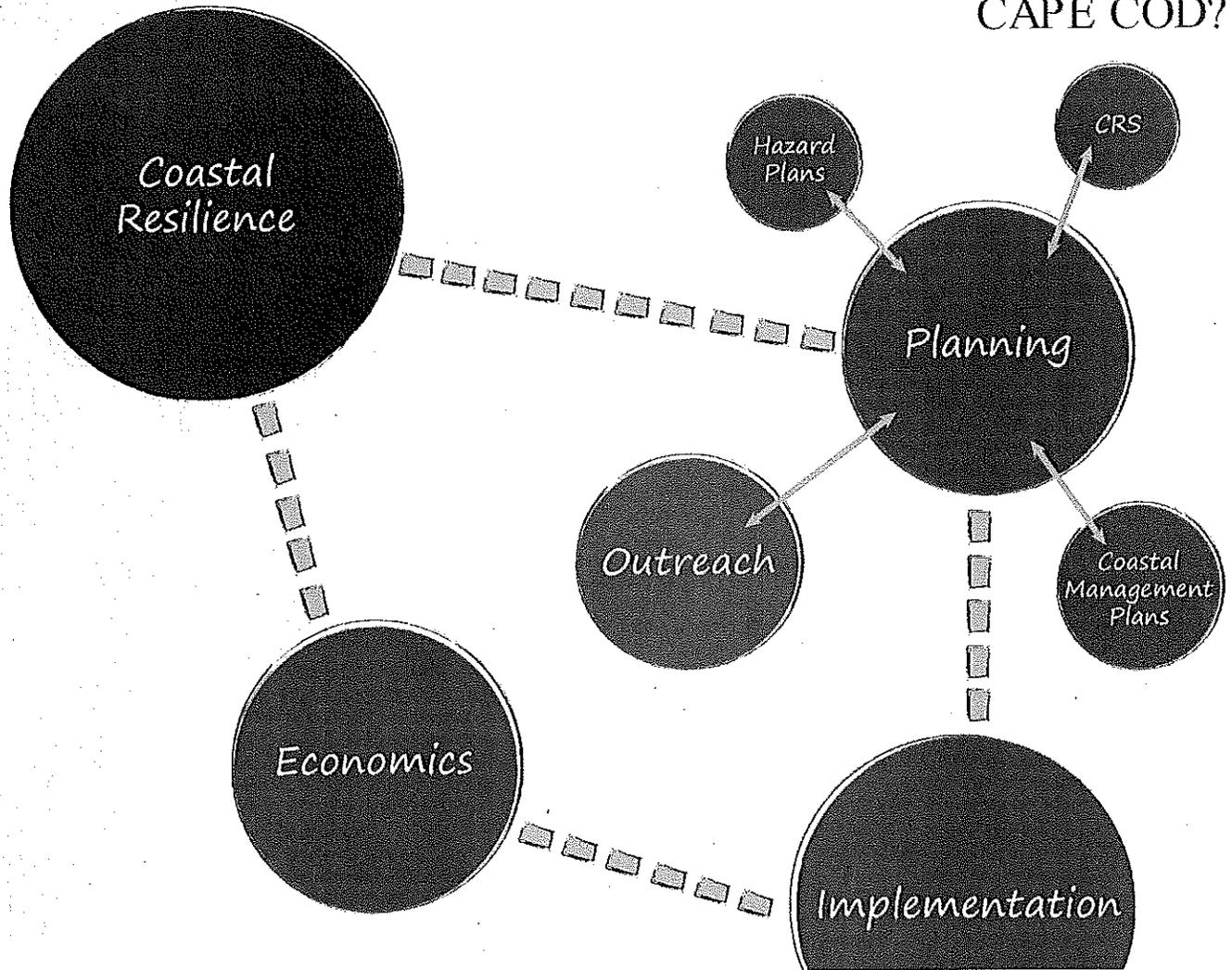
13,000 SINGLE FAMILY
HOMES IN SPECIAL FLOOD
HAZARD AREAS (SFHA)

PROPERTY VALUE:
\$9,000,000,000

HOW DO WE BUILD A RESILIENT CAPE COD?



HOW DO WE BUILD A RESILIENT CAPE COD?

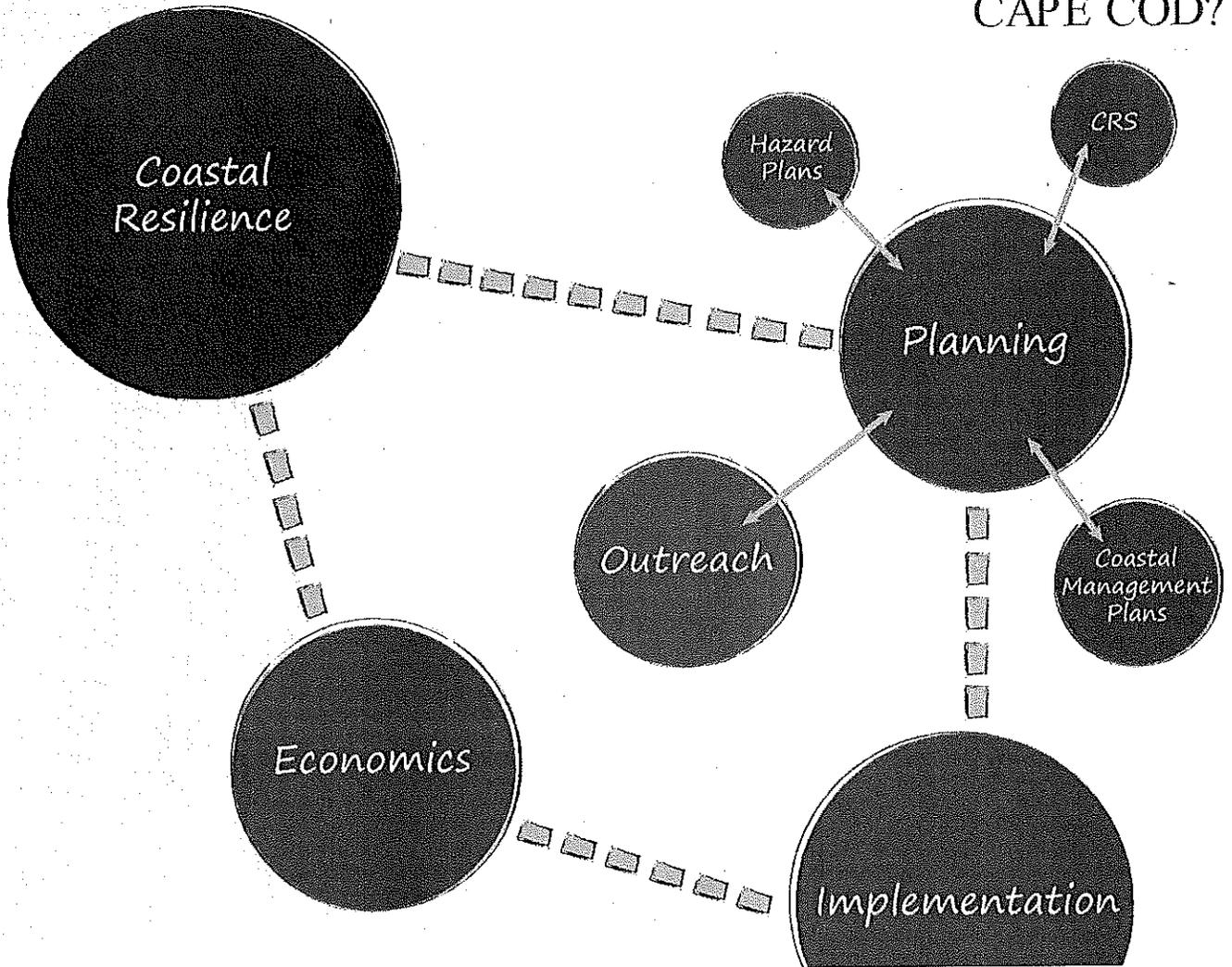


Hazard Planning On Cape Cod

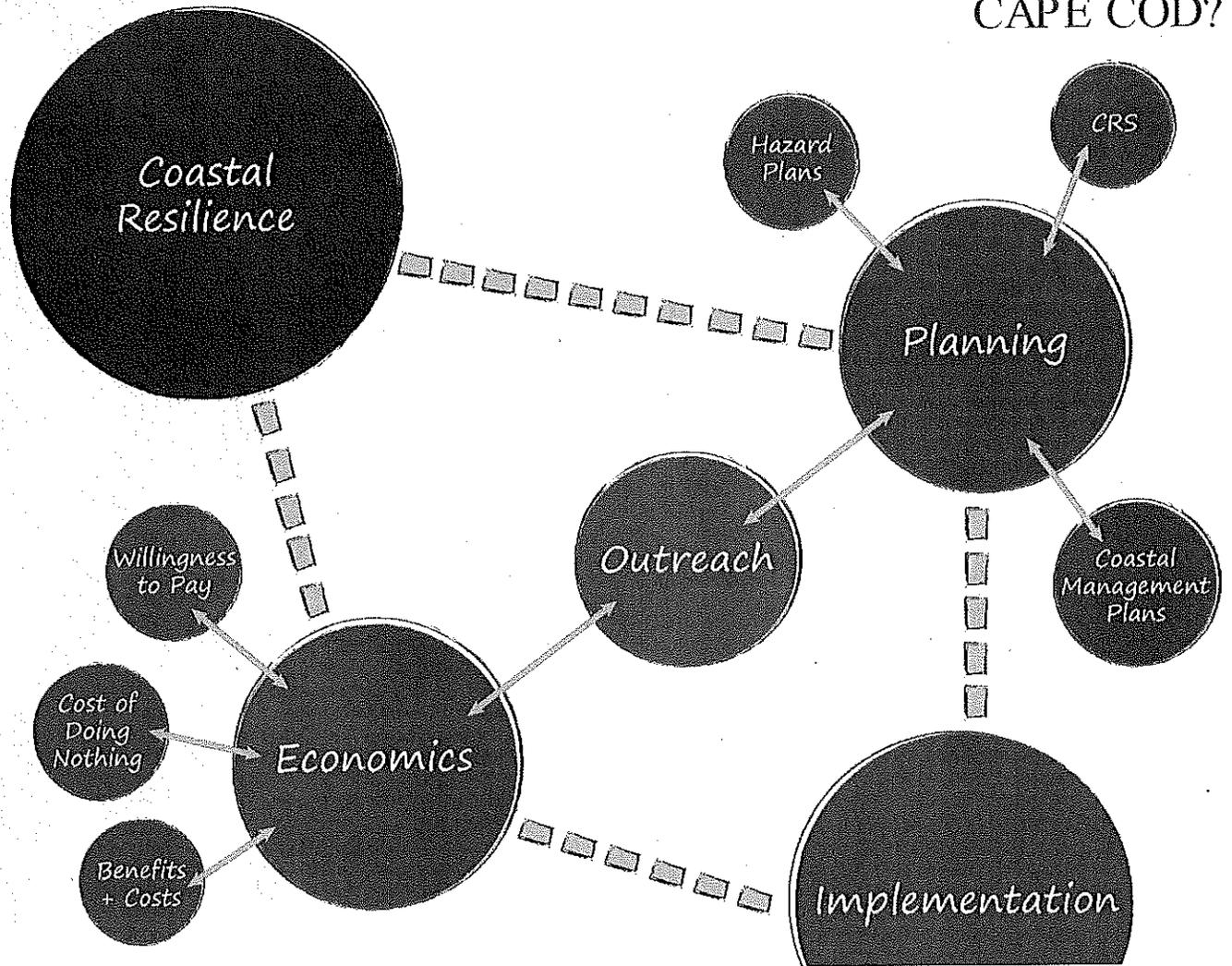
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- Created a template that is fast and easy to update
- Engaged over 2,000 stakeholders and residents
- Broke State record – plans pass through Federal Review without comments

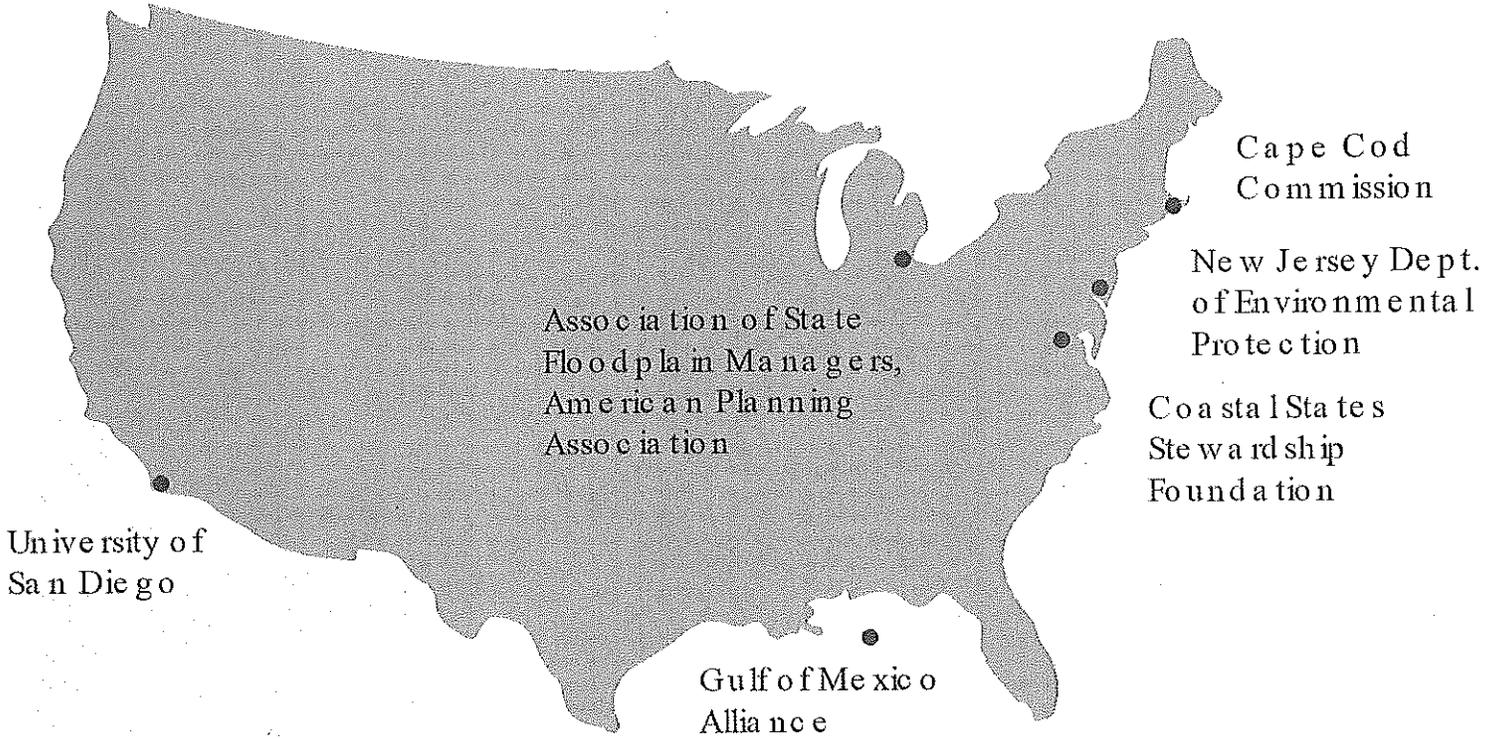
HOW DO WE BUILD A RESILIENT CAPE COD?



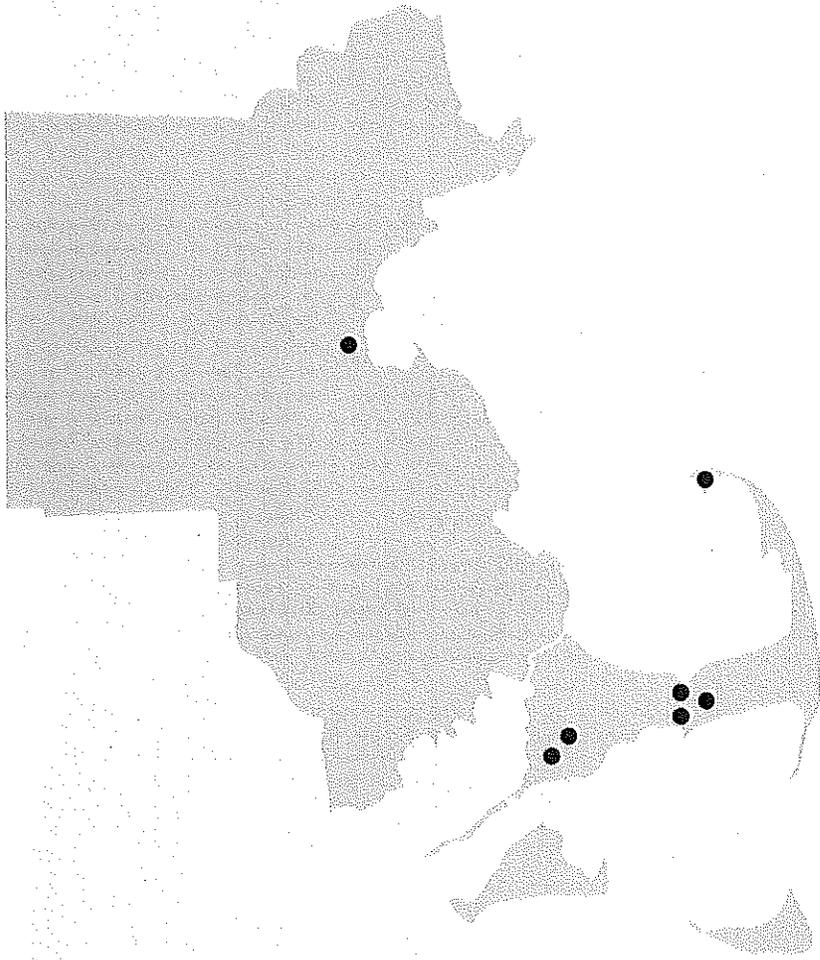
HOW DO WE BUILD A RESILIENT CAPE COD?



NOAA COASTAL RESILIENCY GRANT NATIONAL AWARDS



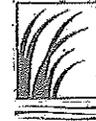
NOAA COASTAL RESILIENCY GRANT REGIONAL PARTNERS



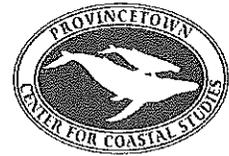
CAPE COD
COMMISSION



APCC
Association to
Preserve Cape Cod



WAQUOIT BAY
NATIONAL
ESTUARINE
RESEARCH
RESERVE

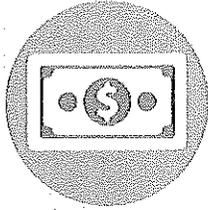


Massachusetts Office of
Coastal Zone Management

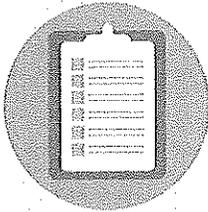
GRANT
PARTNERS

SUPPORTING
AGENCIES

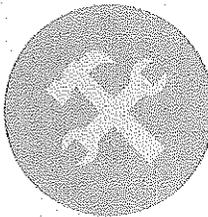
NOAA COASTAL RESILIENCY GRANT PROJECT OVERVIEW



ENVIRONMENTAL ECONOMICS



DATA



TOOL DEVELOPMENT

NOAA COASTAL RESILIENCY GRANT PROJECT HANDOUT

RESILIENT CAPE COD
A Path Forward with Innovative Tools and Public Engagement

A project of the CAPE COD COMMISSION
Funded by a NOAA REGIONAL COASTAL RESILIENCY GRANT

The Cape Cod Commission and our partners will engage the public to improve understanding of the threats under projected climate and sea level rise scenarios, communicate the costs of doing nothing, explore the options for improving resiliency to coastal threats, and compare the costs and benefits of resiliency adaptation strategies at the local and regional scale.

Over the next three years, the Commission will conduct a Capwide public engagement process, economic research to determine economic values and associated tradeoffs for different strategies, compile a database of strategies and build a GIS-based communications tool to help residents and decision makers understand the relative environmental and socio-economic effects of implementing different adaptation strategies.



FACT SHEET: CAPE COD COMMISSION COASTAL RESILIENCY PROJECT

PROJECT PARTNERS

- Association to Preserve Cape Cod
- Waquoit Bay National Estuarine Research Reserve
- Town of Barnstable

SUPPORTING AGENCIES

- Center for Coastal Studies
- Massachusetts Sea Grant
- Massachusetts CZM

PROJECT COSTS

- 2016: \$225,213
- 2017: \$305,850
- 2018: \$250,212

PHASE 1

Data Collection and Adaptation Strategies Database

Collect sufficient data on the impacts of changing climate, sea level rise (SLR), and adaptation strategies to generate a region-wide database of resiliency strategies.

- Year 1:** Develop data sets from existing and new sources to support the understanding and illustrate impacts of climate change and SLR on Cape Cod. Robust public outreach to assure data quality.
- Years 1 - 2:** Compile database of adaptation strategies to improve resiliency, including policies and both hard and soft solutions. Robust public outreach to assure data quality.

PHASE 2

Public Engagement and Socio-Economic Analysis

Engage in a region-wide public process to improve understanding of coastal vulnerability and gauge the region's willingness to take action to improve resiliency to coastal threats.

- Years 1 - 3:** Experiments to determine economic values different strategies and consider trade-offs. Information to be developed and refined through region-wide public engagement.

PHASE 3

Development of the Communication and Decision-Support Tool:

Develop a decision-support tool to aid discussions around implementation of potential adaptation strategies.

- Years 2 - 3:** Develop a GIS-based tool to translate technical data to everyday language, estimate loss of private and public assets, communicate adaptation strategies and their costs/benefits, communicate the need for action and engage the public to select and implement site-specific strategies.
- Year 3:** Use prototype to illustrate the threats of changing climate and SLR, options for adaptation, and compare costs and benefits at local and regional scales. Focus groups of local resource managers, policy makers, and other stakeholders will refine the tool's content and presentation.

PHASE 4

Town of Barnstable Pilot Project

Pilot the planning approach and use of the Decision-Support Tool in the Town of Barnstable.

- Year 3:** Use of tool to advance Barnstable's resiliency planning, improve property owner understanding of climate change and Sea level rise threats, identify and highlight the cost of doing nothing, and determine the costs and benefits of different adaptation strategies.



Regional CRS Management in Barnstable County

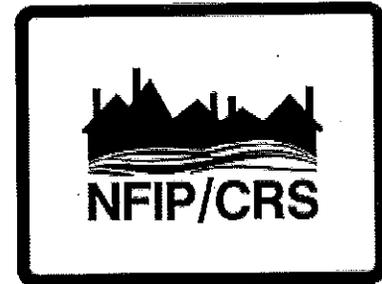
June 15, 2016

Shannon Jarbeau, CFM
Cape Cod Cooperative Extension

Assembly of Delegates

The Community Rating System (CRS)

- Voluntary NFIP program that offers discounts on flood insurance in exchange for actions that reduce flood risk within a community
- Incentivizes resilience, alleviates increasing flood insurance costs, makes town and residents safer from flooding
- Towns participate in the program



CRS Rating Table

Class	Points	Premium Discount
10	0-499	0%
9	500-999	5%
8	1000-1499	10%
7	1500-1999	15%
6	2000-2499	20%
5	2500-2999	25%
4	3000-3499	30%
3	3500-3999	35%
2	4000-4499	40%
1	4500+	45%

CRS Activity Categories

- Public Information
 - Newsletters, brochures, presentations, reading flood maps
- Mapping and Regulations
 - Open space preservation, stormwater management regulations
- Flood Damage Reduction
 - Acquisition/relocation, mitigation, hazard mitigation planning
- Warning and Response
 - Flood emergency response and warnings



OMB No. 1553-0022
Expires: December 31, 2016

National Flood Insurance Program
Community Rating System

Coordinator's Manual

FLA-15/2013



County Partners

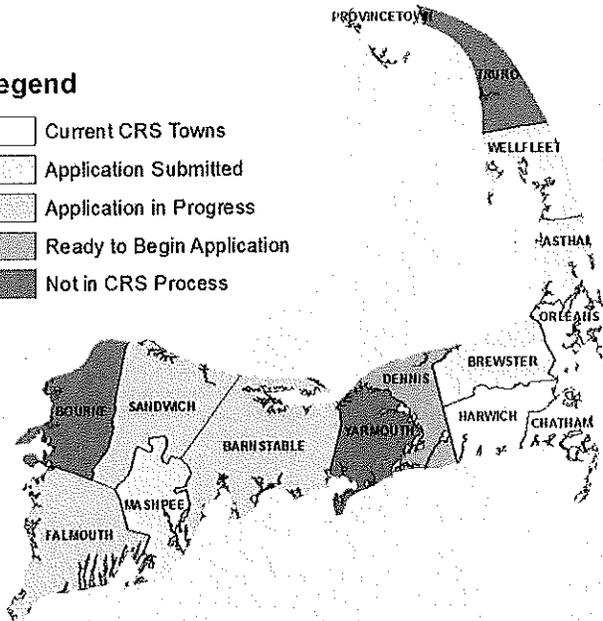
- Cape Cod Commission
- AmeriCorps
- Barnstable County Regional Emergency Planning Committee



Cape Cod CRS Status

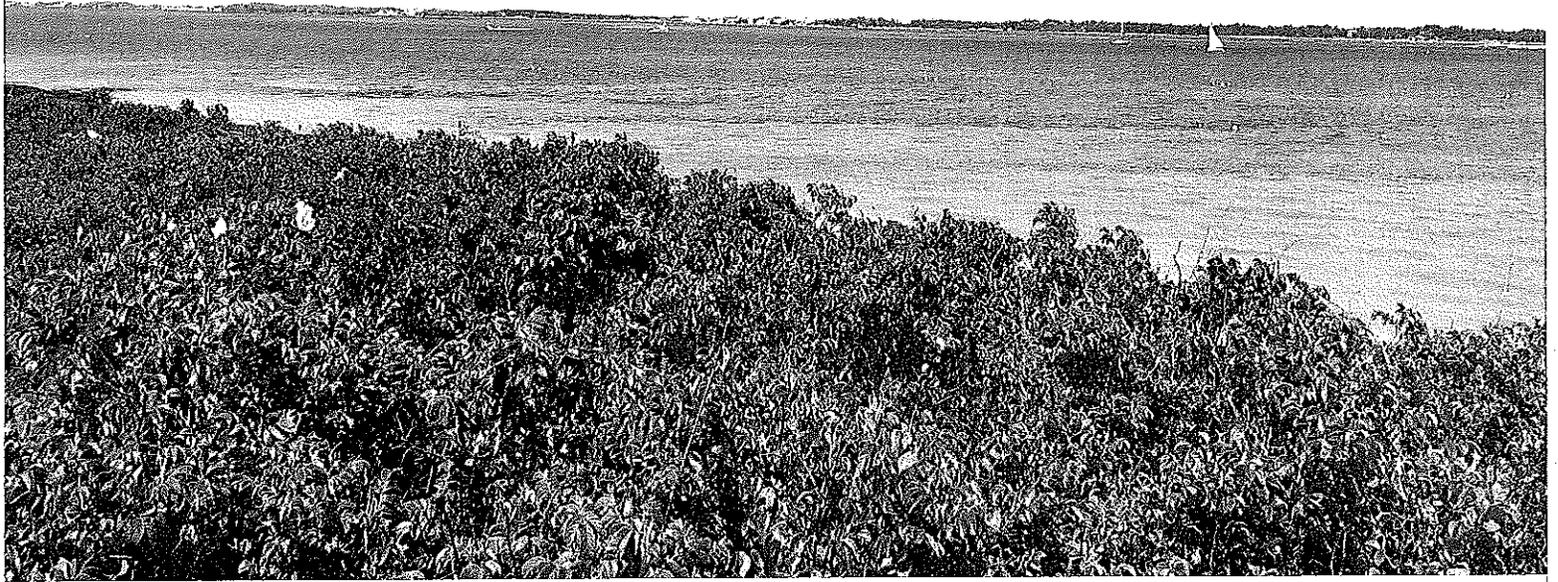
Legend

-  Current CRS Towns
-  Application Submitted
-  Application in Progress
-  Ready to Begin Application
-  Not in CRS Process



- Cape Cod Cooperative Extension CRS Coordinator
- First position of its kind in the country
- Provide National Flood Insurance Program and floodplain management technical assistance
- Manage CRS for all interested towns
- Help towns apply, maintain participation, improve ratings and get highest discount possible
- Help improve flood safety and resilience overall

	Policies in Force	Insurance in Force	CRS Policies in Force	Average Premium	Total CRS Premium	Class 7 Savings (15%)
Barnstable	1189	\$ 341,069,900	851	\$1,567	\$ 1,333,281	\$ 180,368
Bourne	1091	\$262,172,300	1011	\$2,057	\$ 2,079,489	\$ 299,890
Brewster	104	\$32,172,300	40	\$1,081	\$ 43,223	\$ 3,542
Chatham	495	\$150,098,200	319	\$1,397	\$ 445,675	\$ 52,922
Dennis	1537	\$353,084,500	1314	\$1,048	\$ 1,377,550	\$ 171,731
Eastham	204	\$59,401,200	116	\$1,476	\$ 171,216	\$ 22,272
Falmouth	2445	\$654,637,000	2105	\$1,861	\$ 3,916,652	\$ 553,468
Harwich	774	\$219,012,400	620	\$1,012	\$ 627,440	\$ 78,336
Mashpee	639	\$187,301,900	511	\$1,252	\$ 639,716	\$ 82,759
Orleans	245	\$72,221,400	137	\$1,482	\$ 203,071	\$ 25,228
Provincetown	1202	\$262,665,900	1056	\$1,123	\$ 1,186,124	\$ 139,132
Sandwich	450	\$120,523,700	352	\$1,929	\$ 679,014	\$ 91,173
Truro	356	\$66,321,100	312	\$1,098	\$ 342,664	\$ 46,752
Wellfleet	233	\$64,157,800	164	\$1,471	\$ 241,200	\$ 31,945
Yarmouth	1545	\$392,402,600	1359	\$1,485	\$ 2,018,468	\$ 276,843
Total	12509	\$3,237,242,200	10267	\$1,423	\$15,304,783	\$ 2,056,358



Questions?

shannon.jarbeau@barnstablecounty.org
508-375-6952

