



The worst flooding. Ever. So far.



Homes near Silver Sands Beach in Milford were flooded by Hurricane Sandy in 2012. (MICHAEL McANDREWS / Hartford Courant)

## Coastal Concentration of Risk

- In 2010, 123.3 million people, or **39 percent** of US population lived in counties directly on shoreline.
- 1970 - 2010, population + 40%.
- + 10 million people or 8% by 2020
- 6X population density of inland communities



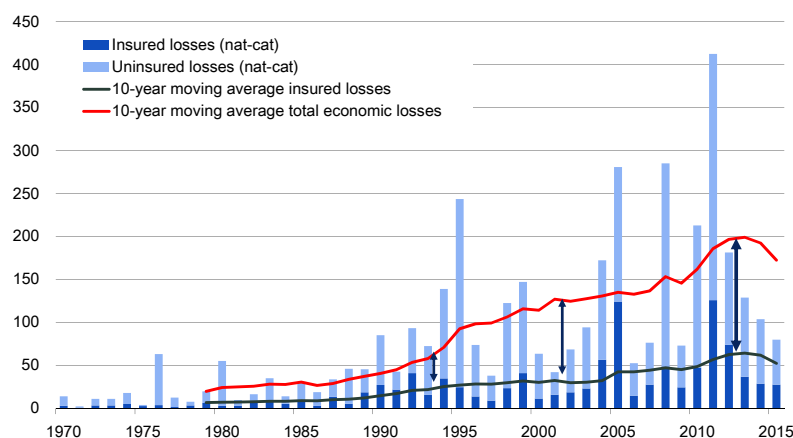
## Disasters in the Making

- Elevated Temperature
- Sea Level Rise
- Coastal Flooding
- Drought
- Wildfire
- Violent Storms
- Very Heavy Rain
- Disease Migration



## Uninsured losses from natural catastrophes are a growing burden for governments

Natural catastrophe losses 1970 – 2016 (in 2016 USD billion)



Source: Swiss Re Economic Research & Consulting and Cat Perils.

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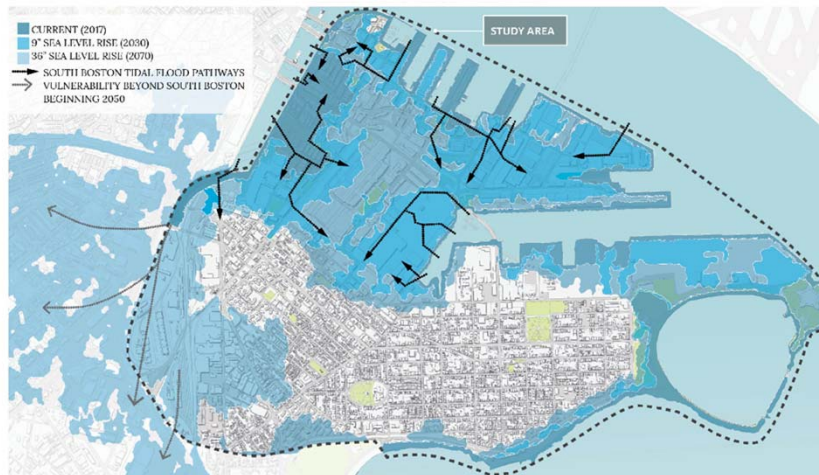
## What does Connecticut Need to Know?

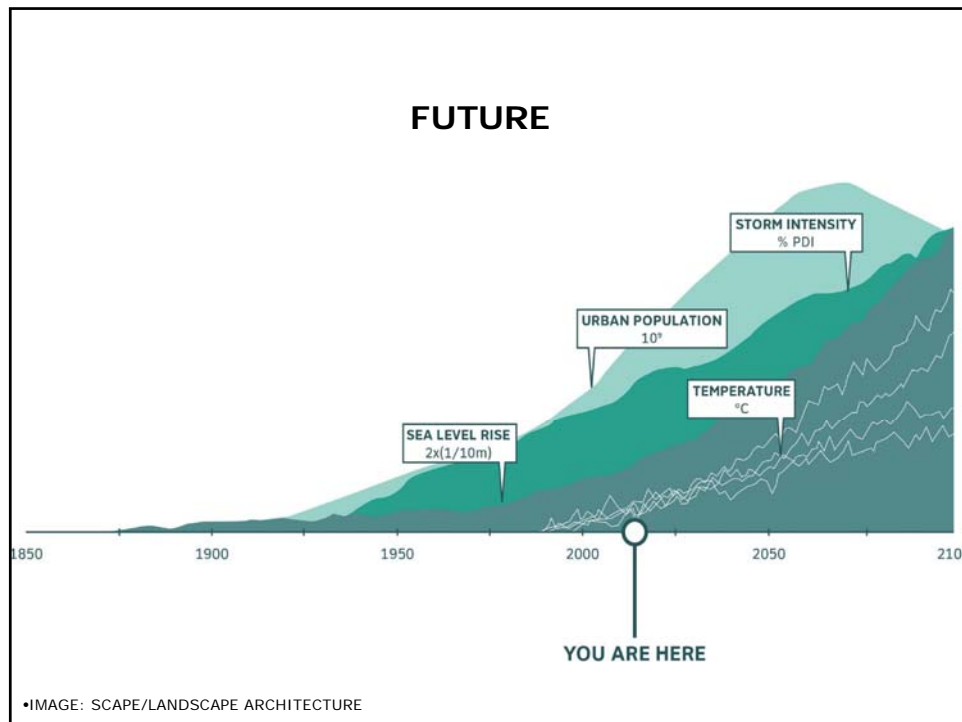
- Know the risk
- Share knowledge of the risk
- Use your *Engineering Chops*
- Use your *regulations*
- What were chronic vulnerabilities BEFORE Irene, Sandy, 2018 Nor'easters?
- What were your aspirations?
- Take Risks to Innovate, Adapt, LEARN
- Leverage work underway or planned





## HISTORIC AND CURRENT SHORELINE

PROBABLE FUTURE STORM FLOOD EXTENTS  
AT THE 1% ANNUAL CHANCE STORM EVENT



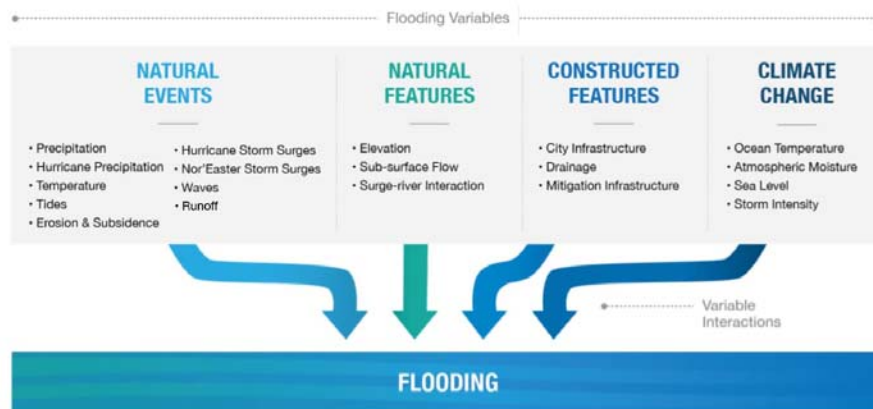
## Where are property owners getting signals about growing risk?

- Homebuilders and Realtors?
- Insurance Premiums?
- Federal Disaster Relief?
- Changing Bond ratings?
- Mortgage Lending?



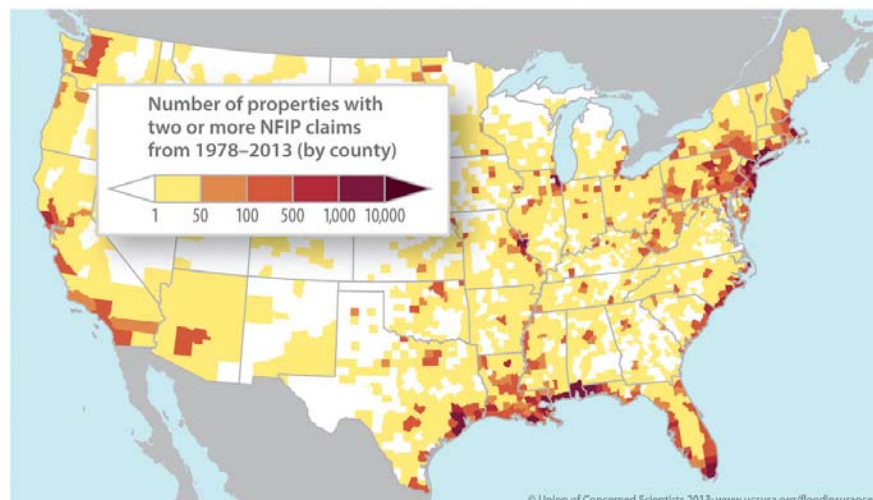
## Start-up: *Jupiter* ClimateScore Intelligence Platform

### Jupiter FloodScore™



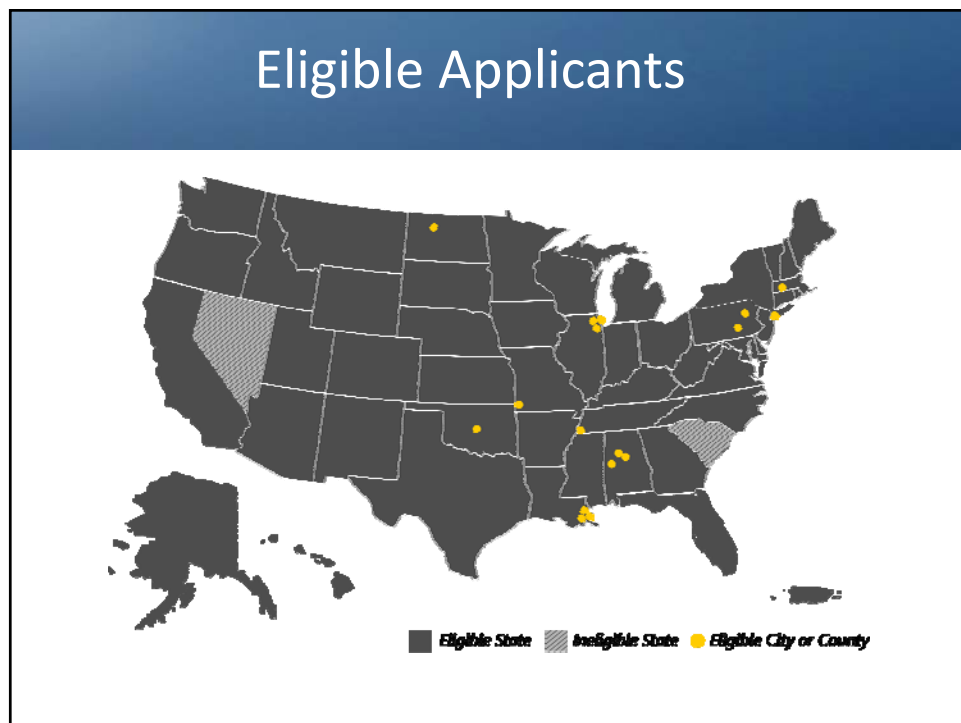
## Federal Flood Insurance

### Repetitive-Loss Properties by U.S. County

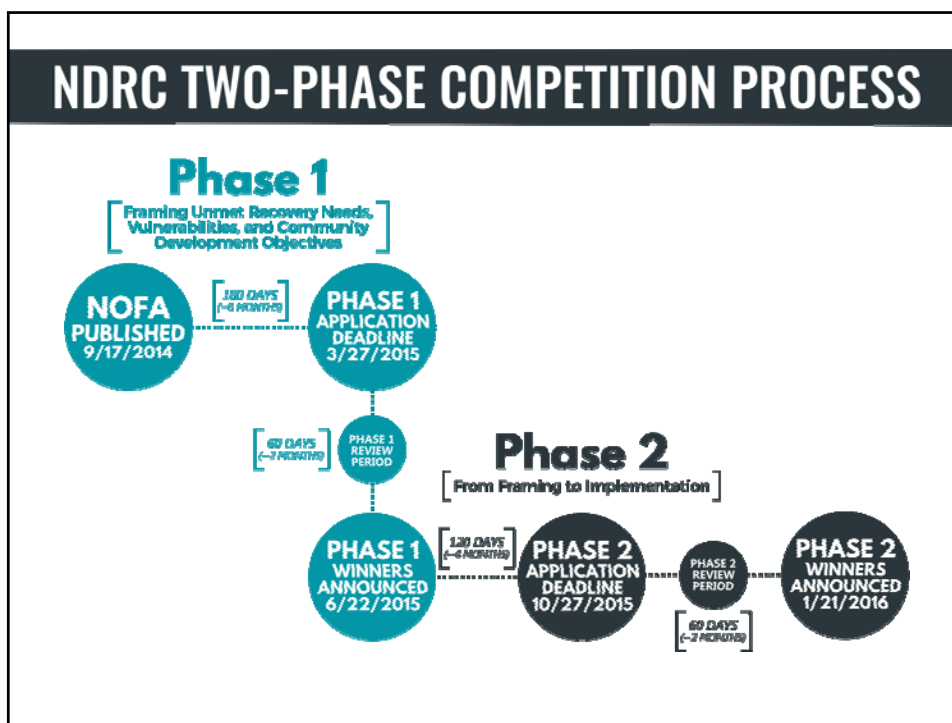




## Eligible Applicants





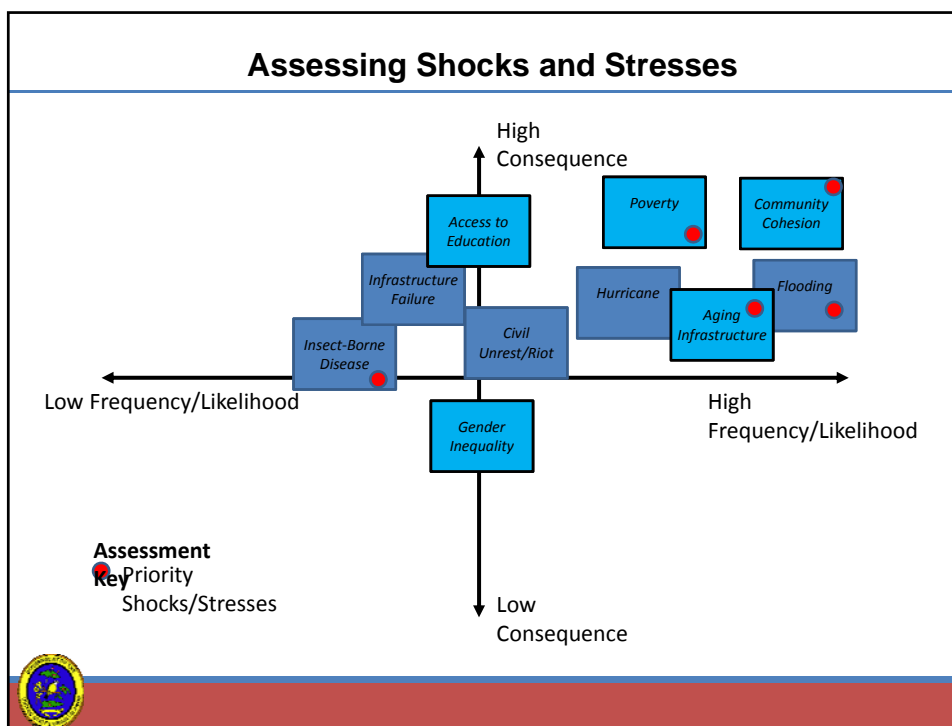


## It's not engineering VS. regulation

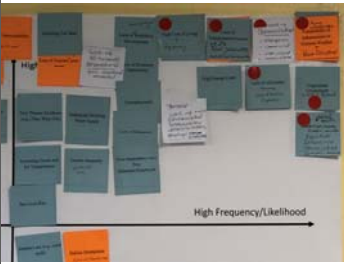
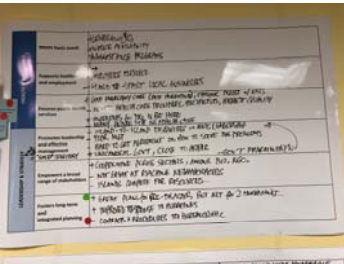

- Stronger building codes
- Buyouts
- Disclosure Requirements
- Prohibitions against building in the most dangerous places
- Other actions to reduce repeatedly flooded properties
- Use of flexibility in land use to encourage more housing in the best places







### FACILITATED DISCUSSION: DEFINE RESILIENCE VALUE

OBJECTIVE	APPROACH	OUTCOME
<p><i>Establish a common set of resilience values and drivers as they relate to the project or program.</i></p>	<p><i>Facilitated brainstorm exercise to identify and group values and drivers.</i></p>	<p><i>An organized list of values and drivers, leading toward a resilience opportunity statement.</i></p>

## RESILIENCE VALUES

### TOP SHOCKS AND STRESSES

- Lack of High Quality Education, Workforce Development and Access to Opportunity
- Aging and Vulnerable Infrastructure
- Quality and Affordable Health Care Access
- High Cost of Living (including Energy Cost)
- Lack of Housing and Affordability



### VALUES

- OPTIMISM ABOUT THE FUTURE, ECONOMIC DIVERSITY, OPPORTUNITY
- SAFETY, ACCESS, COMPETITIVENESS, SUSTAINABILITY, RELIABILITY, ACCOUNTABILITY
- HEALTH
- WELL-BEING, DIVERSITY
- WELL-BEING, SAFETY, COMPETITIVENESS, AFFORDABLE

## *DRAFT* RESILIENCE VALUE STATEMENT

INVEST IN THE PEOPLE OF THE TERRITORY AND THEIR HEALTH, SAFETY AND WELL-BEING NOW AND IN THE FUTURE. BUILD ON THE SPIRIT OF COOPERATION AND PARTNERSHIP IN THE AFTERMATH OF RECENT DISASTERS TO SUPPORT:

- A DIVERSE AND ROBUST ECONOMY THAT IS SUSTAINABLE AND RESILIENT;
- A BUILT AND NATURAL ENVIRONMENT THAT IS ADAPTABLE AND WELL-MAINTAINED; AND
  - A UNIQUE CULTURE AND QUALITY OF LIFE..

Mapping Projects to Resilience Values Exercise				
	RESILIENCE VALUE			
	#1 INVEST IN PEOPLE	#2 SAFETY/ REDUCED RISK	#3 COMPETITIVE	# 4 RELIABLE
<b>Project Example #1: Restore Electric Power System</b>	Lower energy bills  New jobs for residents  Train/retrain on new technology, technique  Diversify economy with renewables  Make USVI Caribbean/ Global energy leader  > Energy efficiency of homes  Engage students on sustainability	Microgrids + Distributed generation: <ul style="list-style-type: none"> <li>o redundancy</li> <li>o lower rate of failure</li> <li>o protect critical facilities</li> </ul> Composite poles, underground  Do risk mgt screen to prioritize	Get people to return  Be first mover on tech innovation & renewables (solar)  Lower energy costs- LPG & renewables	Underground where feasible  Sustain WAPA financially  Microgrids for critical facilities  Mix of fuel sources  Use Muni Arborist to reduce tree impingement  Tree trimmings as compost save disposal \$

## Aren't we doing Disaster Recovery and Resilience?

No, you are using Physical Planning and Investment to "Win the Economy (and all future economies)"



The NOFA created a foundation for developing forward-thinking proposals.

### What is innovative?

#### A **process** that is...

Interdisciplinary and Regional

Engaged

By Design

#### An **approach** that...

Addresses Multiple Risks

Maximizes Co-Benefits

Utilizes Leverage

#### Phase I

Capacity  
25 Points

Need/Extent of Problem  
25 Points

Soundness of Approach  
30 Points

Leverage and Outcomes  
15 Points

Long-Term Commitment  
5 Points

#### Phase II

Capacity  
20 Points

Need/Extent of Problem  
20 Points

Soundness of Approach  
40 Points

Leverage and Outcomes  
10 Points

Long-Term Commitment  
10 Points





## Innovate – FAIL - Succeed



## capital bikeshare™



### Regional bike transit system

Over 3,700 bikes at over 440 stations

*DC; Arlington & Alexandria, VA; Prince  
Georges County & Montgomery County, MD*

42,000 Annual Members

410,000 Casual members

- ❖ 80% said they bicycle more often
- ❖ 40% said they drive less
- ❖ \$819/year saved per member (\$15 million total)



Join.



Take.



Ride.



Return.



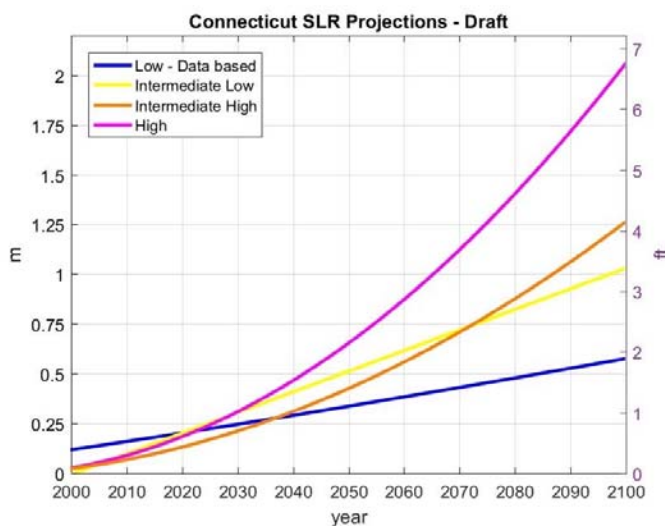
## Pilots and Experiments

- West Haven
  - Buyouts and Easements
  - Installing improved tide gate to moderate flooding at the mouth of Old Field Creek
  - Improving salt marsh around the creek to hold and purge water.
- PACE – financing resilience?
- Green Infrastructure approaches



JAN ELLEN SPIEGEL / CTMIRROR.ORG

## CIRCA's Groundbreaking work on SLR



## Do new housing types make sense for Connecticut?

### Accessory Dwelling Units

■ LIVE  
■ RENT



Illustration by Ryan Sullivan of [Paste In Place](#).

## ADUs: getting more housing into dry, safe single family neighborhoods

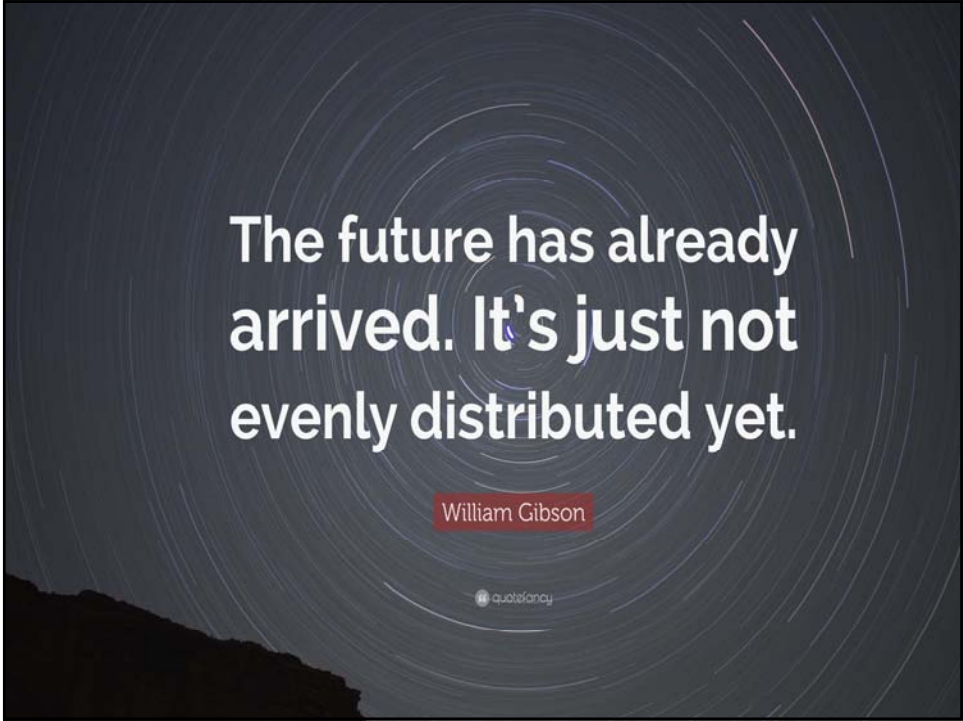


ADUs in Eugene and Portland, OR









The future has already  
arrived. It's just not  
evenly distributed yet.

William Gibson

 quotefancy