

## Resilient Connecticut – 2<sup>nd</sup> Annual Summit Progress Report

“This publication does not express the views of the Department of Housing or the State of Connecticut. The views and opinions expressed are those of the authors. Funding for this project was provided by the United States Department of Housing and Urban Development through the Community Development Block Grant National Disaster Recovery Program, as administered by the State of Connecticut, Department of Housing.”

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 Marine Sciences University of Connecticut

November 20<sup>th</sup>, 2020

**UConn**





HUD NDRC



## Resilient Connecticut



- Coastal Flood Defense System
  - Resilience Center
  - Energy Study
- Floodplain Design Guidelines

- Regional Resilience Planning
- Technical Support & Capacity Building
- Pilot Projects in Fairfield & New Haven Counties

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# Long-term Vision for Establishing Resilient Communities

- Focus community development around transit (resilient TOD)
- Create corridors resilient to climate change (resilient corridors)
- Create opportunities for affordable housing, preserving and enhancing the quality of life for existing affordable communities
- Develop energy, economic, and social resilience
- Increase transit connectivity
- Adapt structures and critical infrastructure in the flood zone to withstand occasional flooding
- Protect communities through healthy buffering ecosystems, where critical services, infrastructure, and transport hubs are located on safer, higher ground, and where strong connections exist between the two

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# Resilient Connecticut

## Planning



- Resilient Connecticut Planning Framework
- Regional Resilience Planning
- Implementation Planning for Pilot Projects

## Technical Support



- Flood Risk and Vulnerability Assessment
- Climate Impact Modeling
- Adaptation Option Evaluation & Data Collection

## Capacity Building



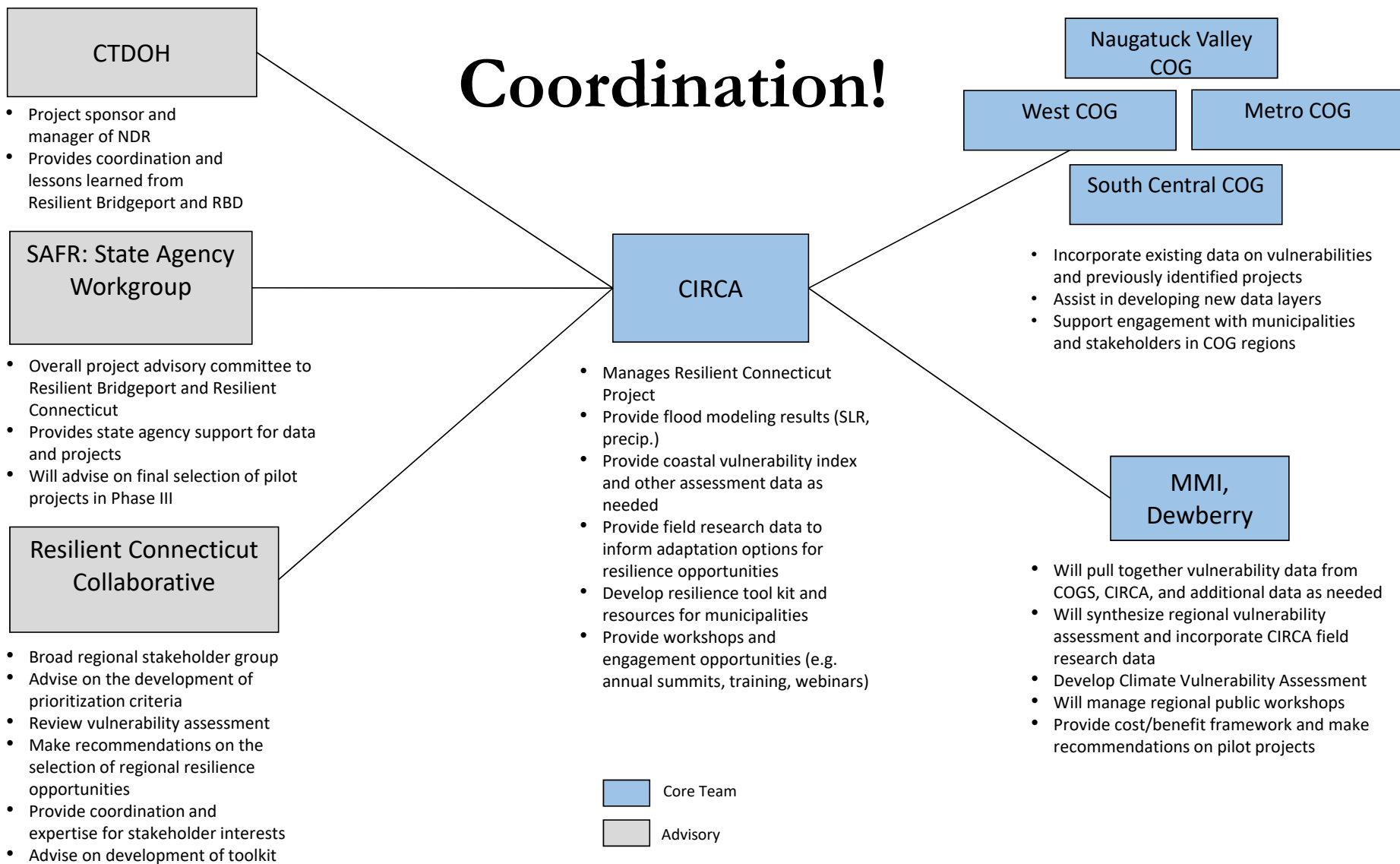
- Applied Field Research
- Climate Impacts to Public Health in CT
- Economics & Cost/Benefit Development
- Legal & Policy Recommendations

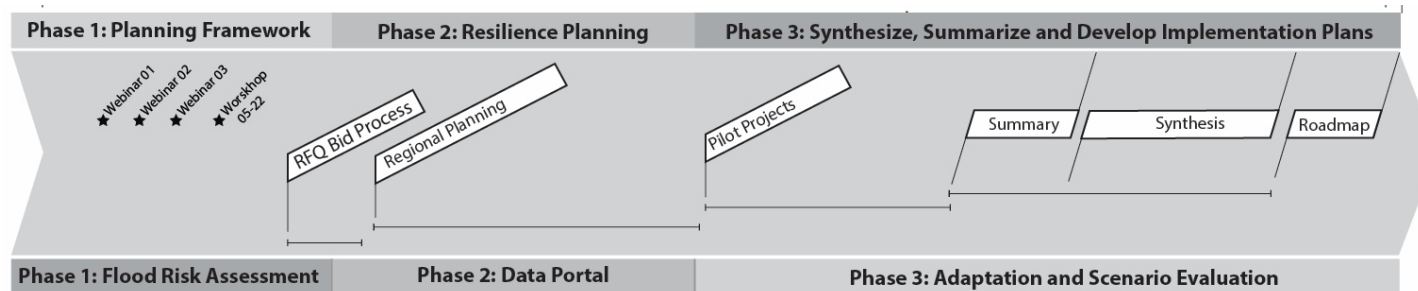
## Engagement



- Resilient Connecticut Annual Summit
- Monthly Webinar Series
- Resilient Connecticut Collaborative and Working Groups
- Workshop Series

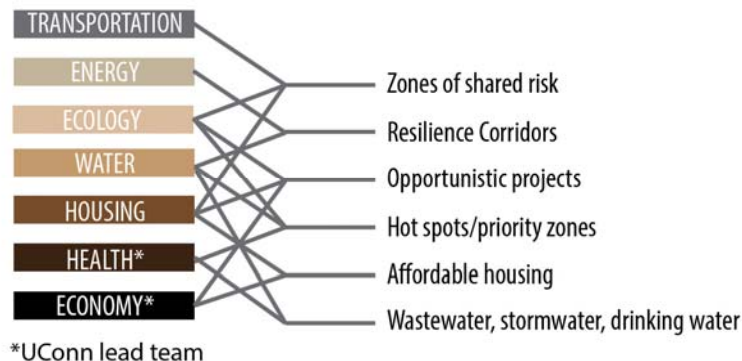
# Coordination!





## Phase II: January 2020 – July 2021

- ☐ Regional Analysis
- ☐ Regional Engagement



## Phase III: May 2021 – May 2022

- ☐ Develop Pilot Projects
- ☐ Implementation Planning



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# Research Progress

## CIRCA Research


- Integrated flood modeling
- Vulnerability assessment

## Capacity Building

- Hydrology modeling
- Heat vulnerability
- Transit oriented development
- Climate Policy



Based on recent CIRCA research, how much do we expect sea-level rise to increase along the coast in Connecticut by 2050?

 Start presenting to display the poll results on this slide.



# Integrated flood modeling – LIS model

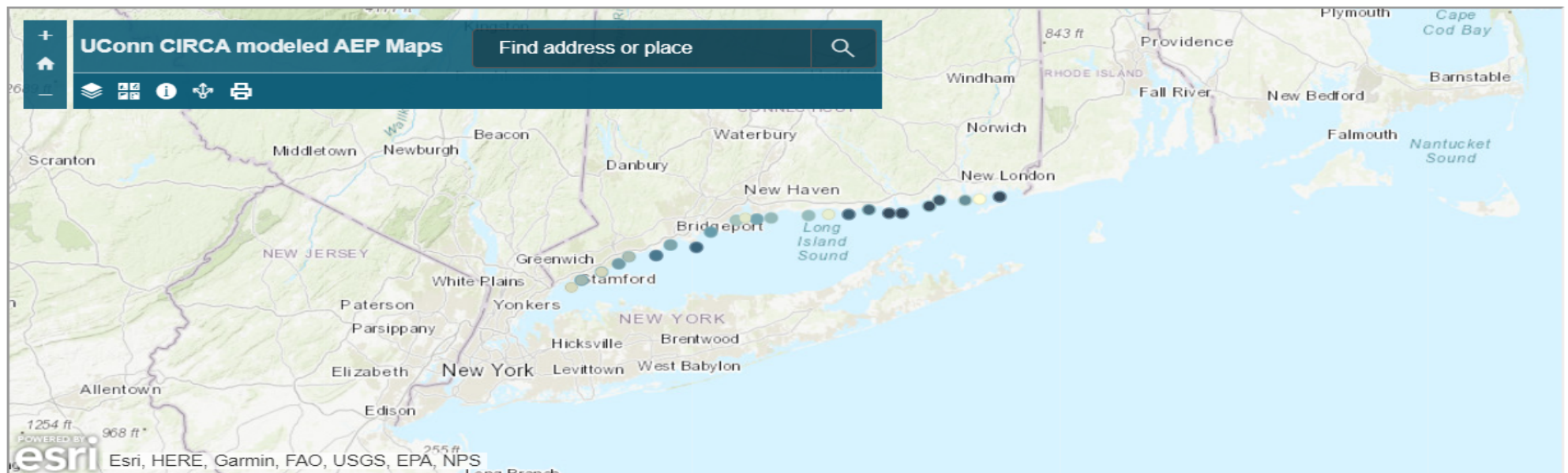
## Connecticut Coastal Towns Storm Annual Exceedance Probability/Return Interval Viewer

This viewer presents the projected storm surge water levels and significant wave heights, which may contribute to a better understanding of extreme storms to guide decision-makers. The anticipated sea level of 20 inches by 2050 can be added to the different flood scenarios. More information on the methodology is presented in the [Documents](#).

To use the viewer, please click on the drop-down menu to chose the town. Different projections of storm surge and significant wave height projections will activate automatically for different towns. The user can compare different towns by Add Town option.

To navigate through the drop-down viewer, please use

[MUNICIPAL STORM SURGE AND SIGNIFICANT WAVE HEIGHT LEVEL WORKSHEET](#)



Add Town Remove Town

Please choose a town:

Branford ▼

### Branford

Lat: 41.235046° N

Lon: -72.816795° E

Depth: 30 ft

| Return Period<br>(year) | h (ft) | Hs (ft) |
|-------------------------|--------|---------|
| 2                       | 4.59   | 2.76    |
| 3                       | 5.43   | 4.77    |
| 4                       | 5.88   | 5.96    |
| 5                       | 6.19   | 6.80    |
| 6                       | 6.41   | 7.44    |
| 7                       | 6.58   | 7.95    |
| 8                       | 6.72   | 8.38    |
| 9                       | 6.84   | 8.74    |
| 10                      | 6.94   | 9.06    |
| 20                      | 7.49   | 10.97   |
| 30                      | 7.77   | 11.96   |
| 40                      | 7.91   | 12.62   |
| 50                      | 8.02   | 13.10   |
| 60                      | 8.11   | 13.49   |
| 70                      | 8.18   | 13.80   |
| 80                      | 8.23   | 14.06   |
| 90                      | 8.28   | 14.29   |

Please choose a town:

Bridgeport ▼

### Bridgeport

Lat: 41.14083° N

Lon: -73.20517° E

Depth: 25 ft

| Return Period<br>(year) | h (ft) | Hs (ft) |
|-------------------------|--------|---------|
| 2                       | 5.27   | 3.75    |
| 3                       | 6.09   | 5.44    |
| 4                       | 6.54   | 6.48    |
| 5                       | 6.85   | 7.21    |
| 6                       | 7.07   | 7.78    |
| 7                       | 7.25   | 8.25    |
| 8                       | 7.39   | 8.64    |
| 9                       | 7.51   | 8.98    |
| 10                      | 7.62   | 9.27    |
| 20                      | 8.20   | 11.09   |
| 30                      | 8.48   | 12.07   |
| 40                      | 8.66   | 12.74   |
| 50                      | 8.78   | 13.24   |
| 60                      | 8.88   | 13.63   |
| 70                      | 8.95   | 13.96   |
| 80                      | 9.02   | 14.24   |
| 90                      | 9.07   | 14.49   |

Please choose a town:

Clinton ▼

### Clinton

Lat: 41.247456° N

Lon: -72.52144° E

Depth: 26 ft

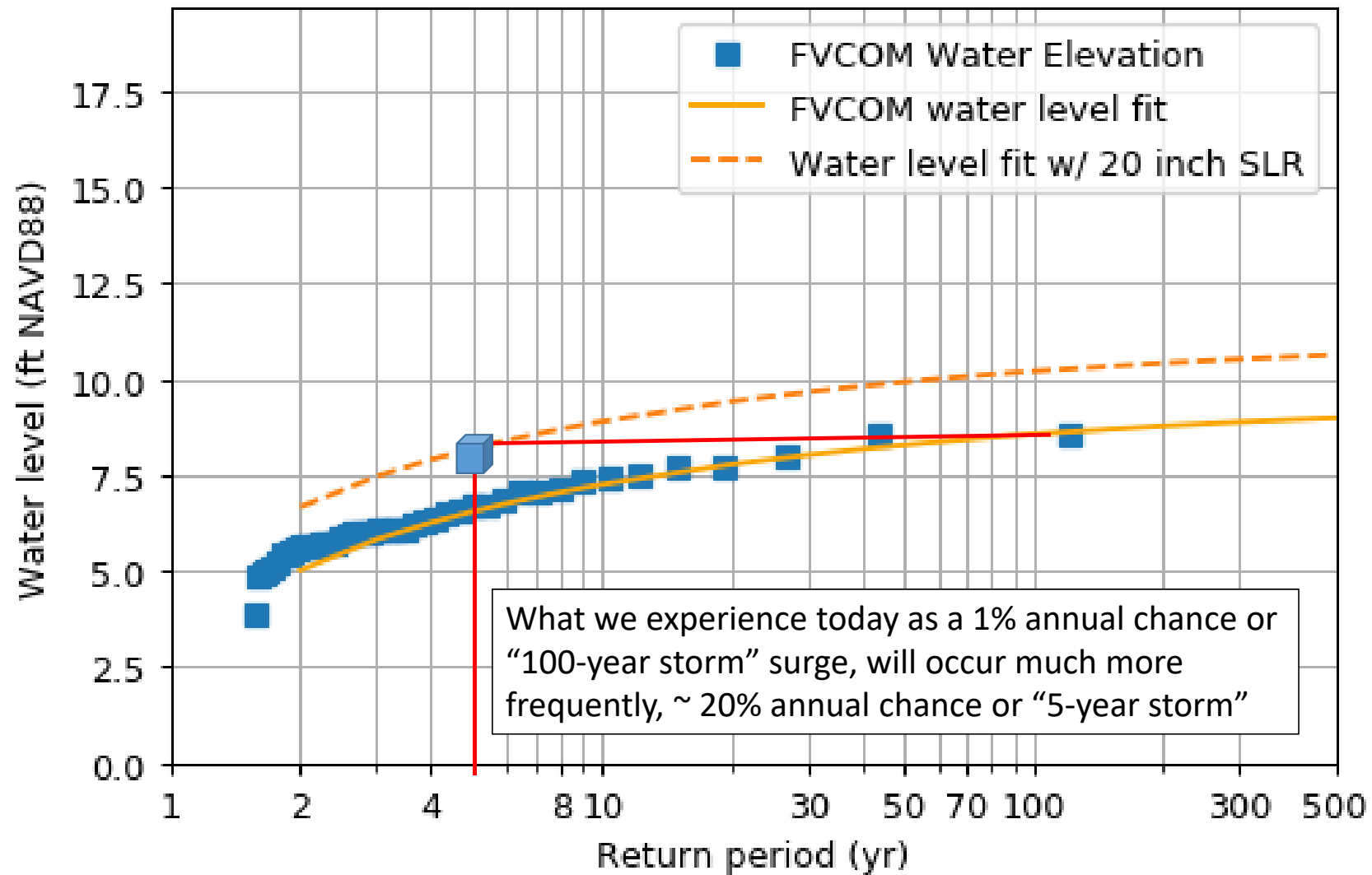
| Return Period<br>(year) | h (ft) | Hs (ft) |
|-------------------------|--------|---------|
| 2                       | 3.92   | 3.44    |
| 3                       | 4.72   | 5.73    |
| 4                       | 5.16   | 7.09    |
| 5                       | 5.45   | 8.05    |
| 6                       | 5.67   | 8.78    |
| 7                       | 5.84   | 9.37    |
| 8                       | 5.97   | 9.86    |
| 9                       | 6.09   | 10.28   |
| 10                      | 6.19   | 10.65   |
| 20                      | 6.74   | 12.85   |
| 30                      | 7.00   | 14.00   |
| 40                      | 7.16   | 14.76   |
| 50                      | 7.28   | 15.33   |
| 60                      | 7.37   | 15.77   |
| 70                      | 7.44   | 16.14   |
| 80                      | 7.50   | 16.45   |
| 90                      | 7.55   | 16.71   |

## Data Description and Usage

The results presented here are the modeled storm surge water levels using coupled coastal circulation and wave model (FVCOM-SWAVE, finite-volume coastal ocean model with the version of the Simulating Wave Nearshore) to hindcast the 44 highest storms between 1950-2018. The floodwater elevation for the different annual exceedance



## Milford





## Layer List

- ☐ 100 Year Flood Event Plus 1 foot SLR ...
- ☐ 100 Year Flood Event Plus 20 inches SLR ...
- ☒ 10 Year Flood Event (FVCOM) ...
- ☒ 10 Year Flood Event Plus 20 inches SLR (FVCOM) ...
- ☒ 30 Year Flood Event Plus 20 inches SLR (FVCOM) ...
- ☒ 30 Year Flood Event (FVCOM) ...
- ☒ 100 Year Flood Event (FVCOM) ...
- ☒ 100 Year Flood Event Plus 20 inches SLR (FVCOM) ...
- ☒ 500 Year Flood Event (FVCOM) ...
- ☒ 500 Year Flood Event Plus 20 inches SLR (FVCOM) ...
- ☐ Continuous LiMWA Line ...

- Storm surge raster maps available (with 1 m depth resolution)
  - 10 yr
  - 30 yr
  - 100 yr
  - 500 yr
  - SLR scenarios: 20 inc, 4 ft, 7 ft

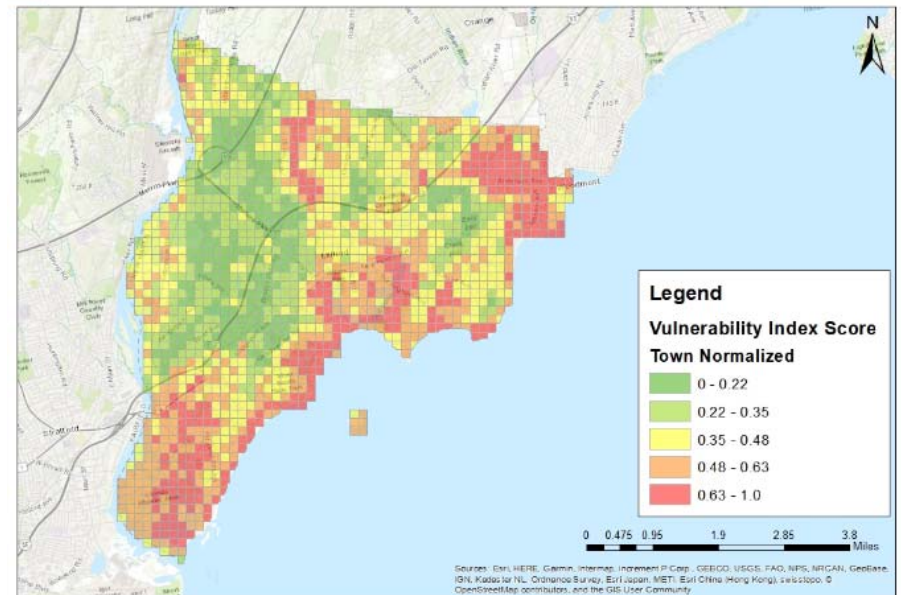
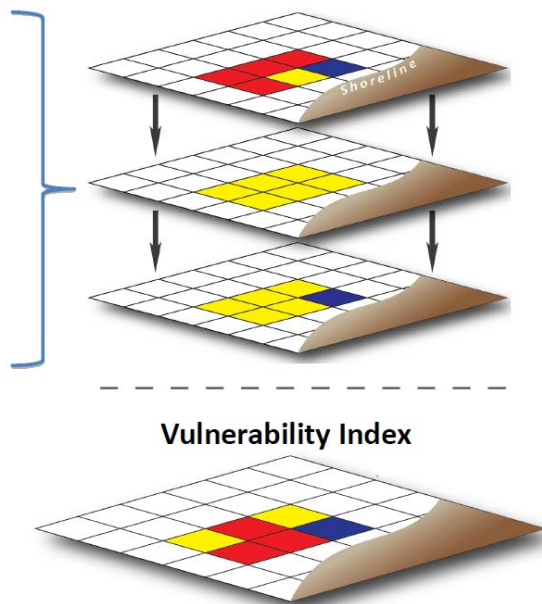
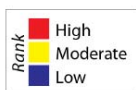


# Coastal Vulnerability

coastal vulnerability index

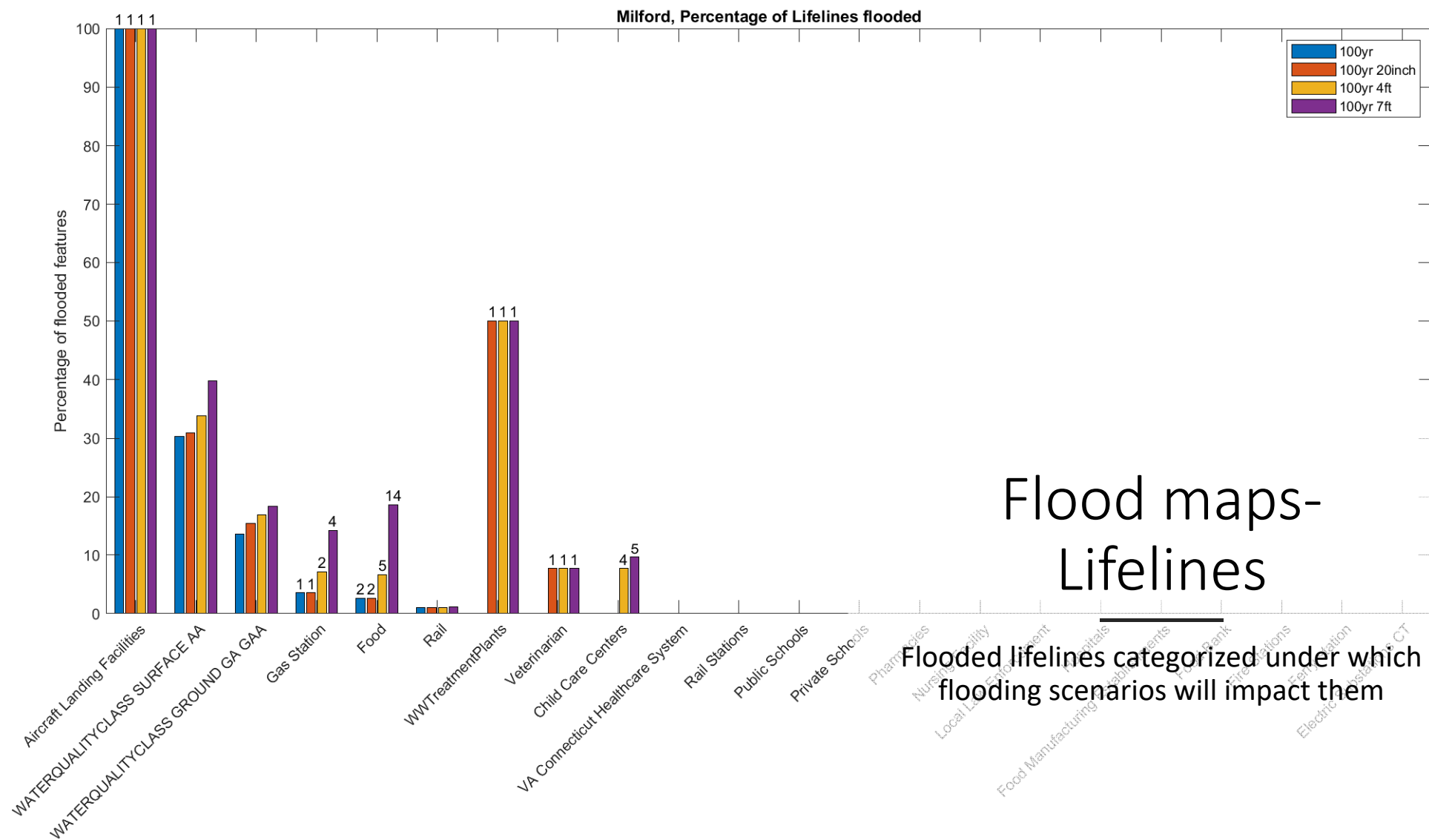
## Variables

Bio-physical  
and  
Socio-  
economic  
parameters



Milford Coastal Vulnerability Map






## Flood maps- Lifelines

Flooded lifelines categorized under which  
flooding scenarios will impact them

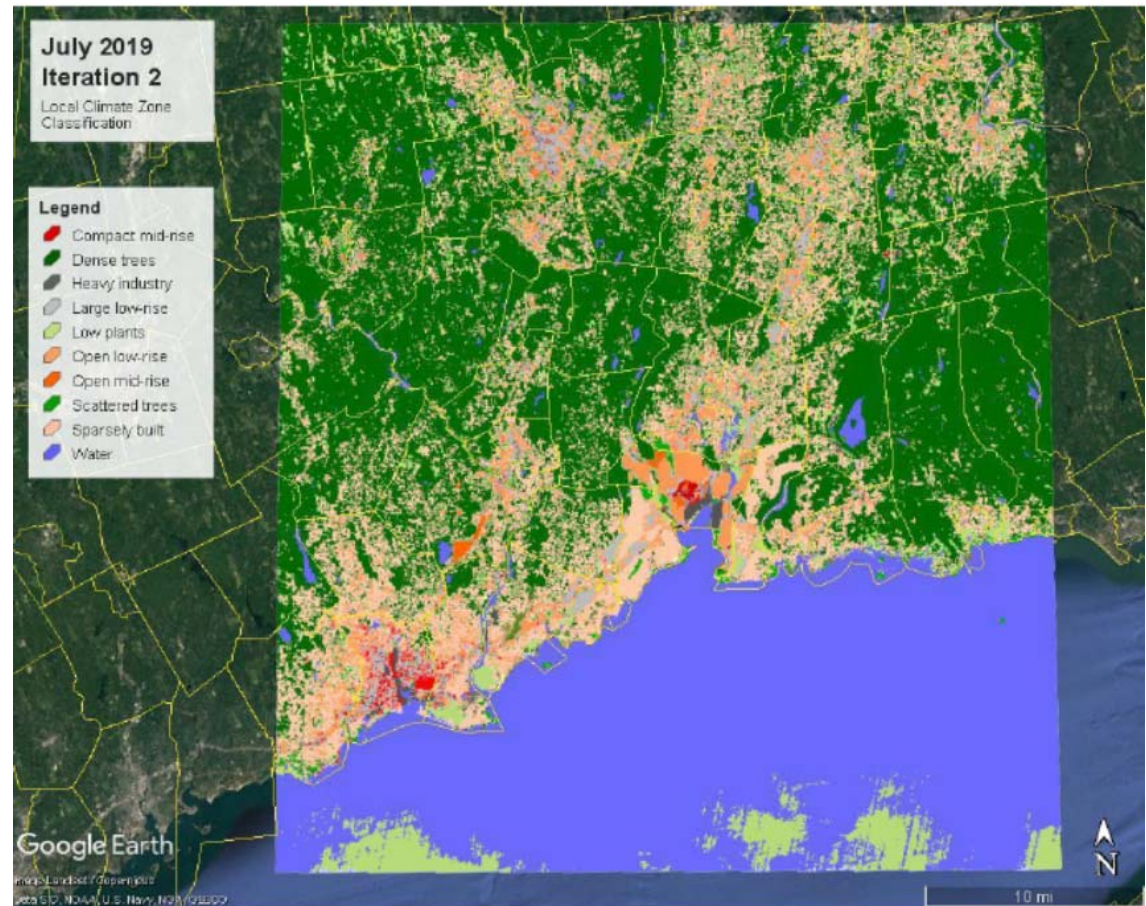


Based on recent UConn research, by 2050 the number of days above 90 degrees will increase from 5 days on average to what?

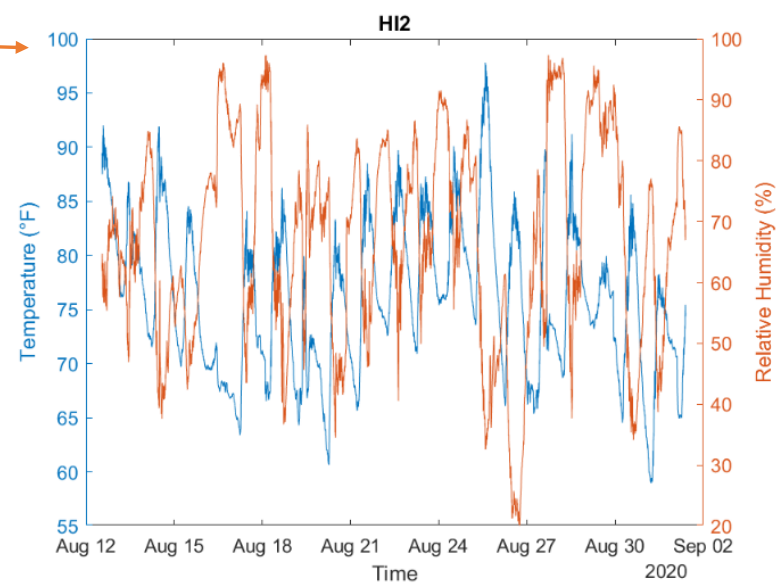
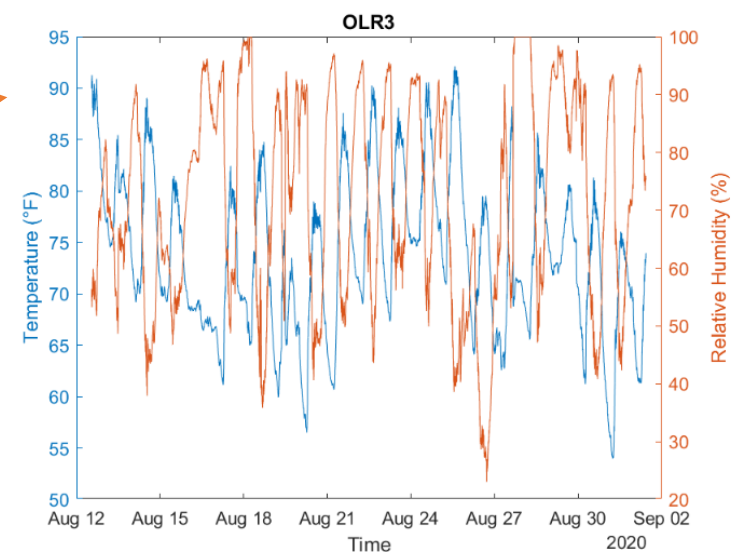
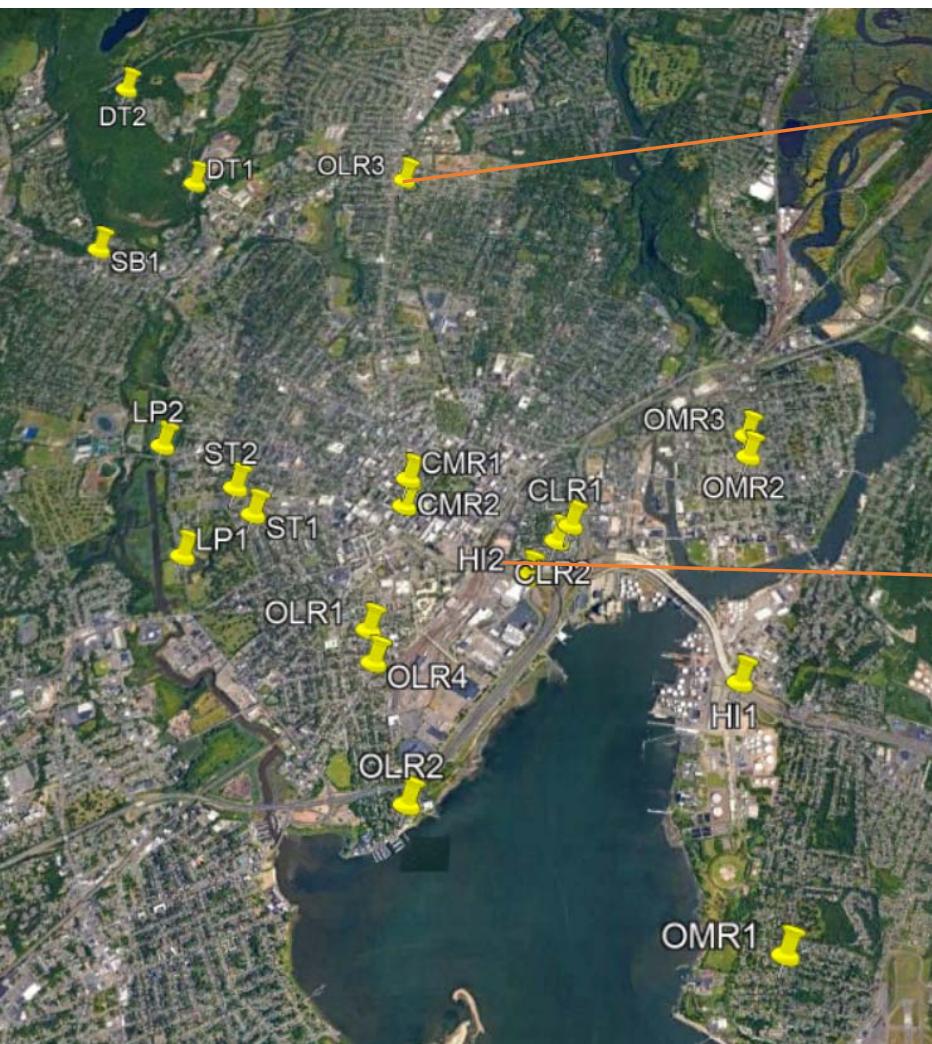
 Start presenting to display the poll results on this slide.

## Identifying the Change in Heat Vulnerability and Land-use Influence

- Utilizing the local climate zones (LCZ) classification current land cover types and how they relate to surface temperature variations
- Heat vulnerability index considering exposure, sensitivity and adaptive capacity







# More on Capacity Building Research

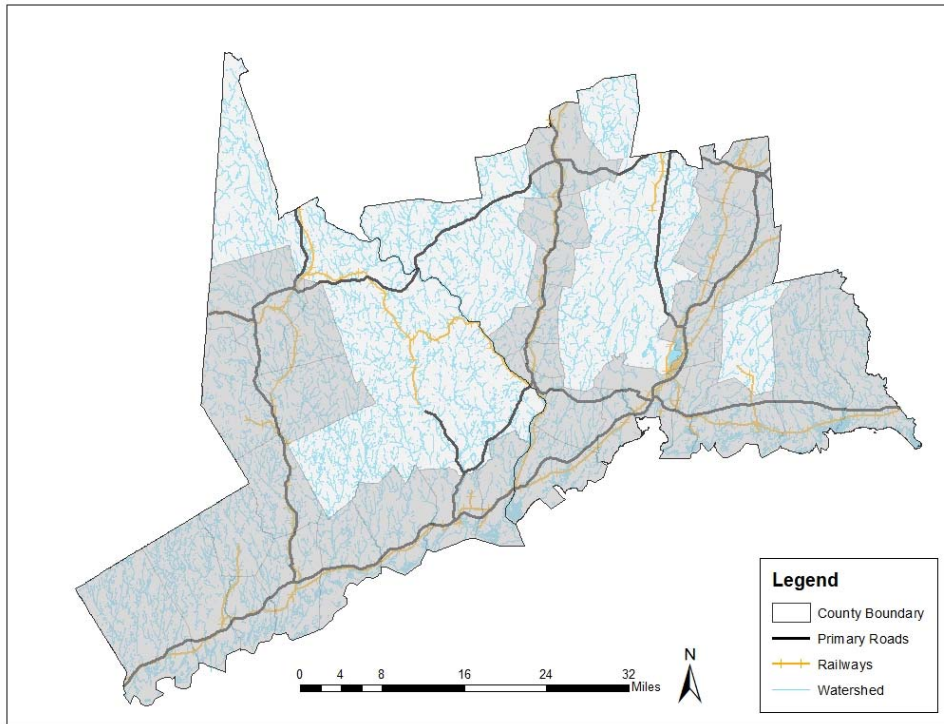
## Transit Oriented Development

- Geodatabase creation of land use, size, use, and configuration of the existing transit services
- Assessment of obstacles and potential on TODs, structured interviews with government leaders, transit providers, and citizen activists

## Legal Fellow – Policy Research

- Reviewing case law and legal precedents to identify barriers or pathways to adaptation actions
- Gather information from stakeholders on policy priorities.
- Research and, if appropriate, suggest legal structures to foster resiliency

# Resilient Connecticut Phase II Planning



**Planning team** - Milone & MacBroom/Dewberry, CIRCA, West, Metro, Naugatuck Valley, and South Central COGs

☐ Regional Analysis

☐ Regional Engagement



# Resilient Connecticut Phase II

*From Data to Resilient Adaptation Projects*





# Ongoing Stakeholder Engagement

- Climate and Public Health webinar series
- DPH/CIRCA Survey deployed September 2, close October 2, on cooling station best practices
- Upcoming regional workshops in January and April 2021
- GIS coordination meetings w/COGs in 2-week intervals, cycling through data types



# GC3 and Resilient Connecticut Coordination

- Resilient Connecticut team interested in identifying and piloting approaches in our project area that would help to move specific issues forward for GC3.
  - E.g. vulnerability assessment of state assets, operations, infrastructure, etc.
  - Approach can be developed in RC project area in 2021 and expanded 2022
- Identify areas where other organizations or working groups have done work or will do so under EO3.
  - Prevent duplication of effort
  - We'd like to incorporate that work into our planning process to improve the outcomes for stakeholders.
- Areas of collaboration
  - Infrastructure and Land Use Working Group
  - Financing Resilience Working Group
  - Science and Technology Working Group
  - Public Health and Safety Working Group



Thank You!

[Resilientconnecticut.uconn.edu](https://Resilientconnecticut.uconn.edu)

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