

# Welcome to the Village of Tarrytown's Climate-adaptive Design (CaD) Studio!

**10:30 am** Introductions + presentations

**11:15 pm** Group discussion with city stakeholders and partners

**12:30 pm** Lunch + one-on-one conversations on focus topics

**1:30 pm** Adjourn



NEW YORK STATE  
WATER  
RESOURCES INSTITUTE  
Cornell University



Department of  
Environmental  
Conservation

Hudson River  
Estuary Program

Libby Zemaitis | September 9, 2022

NYSDEC Hudson River Estuary Program +  
Water Resources Institute at Cornell University



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**Supporting the Village of Tarrytown as a  
leader in Climate-adaptive Design**

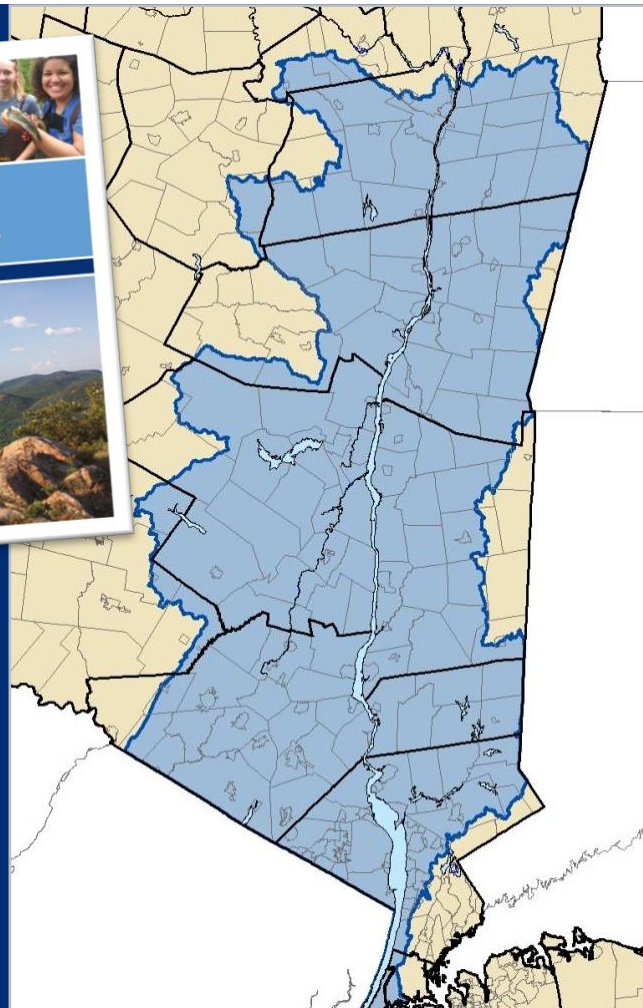
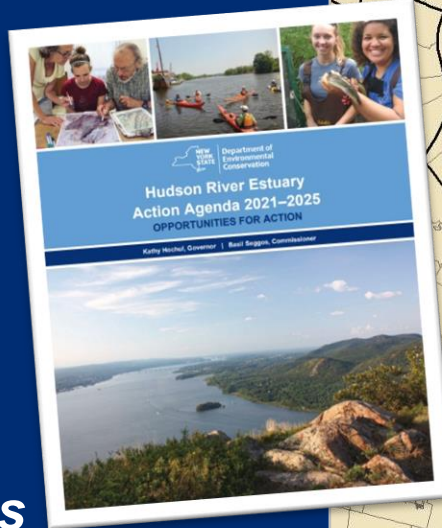
# The Hudson River Estuary Program

Working to achieve key benefits

- Robust fisheries & habitats
- Clean water
- ***Climate-adaptive communities***
- Protected natural areas
- Informed & engaged public
- Accessible Hudson River for all

Part of the NYS Department of Environmental Conservation

<https://www.dec.ny.gov/lands/39786.html>





**Weather is what  
you are wearing  
(day to day)**

**Climate is what  
you have in your  
closet  
(long-term pattern)**

## WEATHER

Tells you what to wear each day



## CLIMATE

Tells you what types of clothes  
to have in your closet



# New York's climate is changing faster than national and global averages

## Climate hazards

Trends in our climate



- Increasing temperatures



- Changing precipitation patterns



- Rising sea level



## Climate risks

Impacts to humans



- Heat waves



- Short-term drought



- Flooding



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# Focusing moments: Hurricane Irene, Tropical Storm Lee (2011) and Superstorm Sandy (2012)



2020: record heat, wildfires & hurricane season

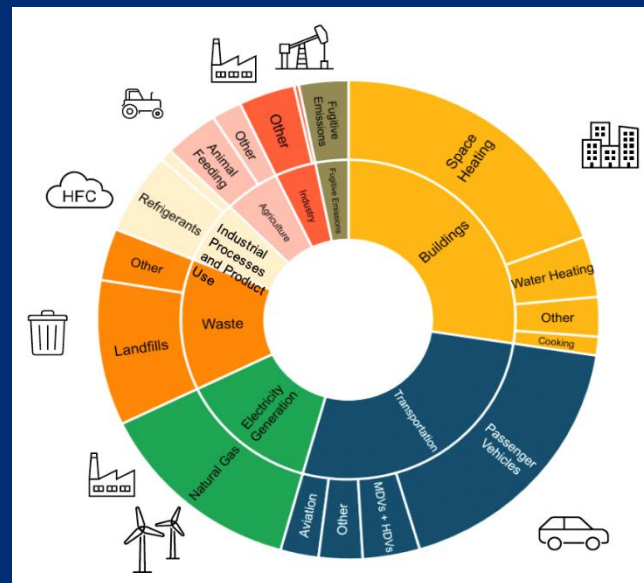
2021: flooding & heat waves in NYS

2022: drought & heat waves in NYS

# NYS Climate Leadership & Community Protection Act

- Nation-leading goals
  - Carbon-free electricity by 2040
  - Carbon neutral economy by 2050
  - 35-40% investment to disadvantaged communities
- <https://climate.ny.gov/>
- Read the [draft scoping plan](#)
- Read the [draft Disadvantaged Communities Criteria](#)

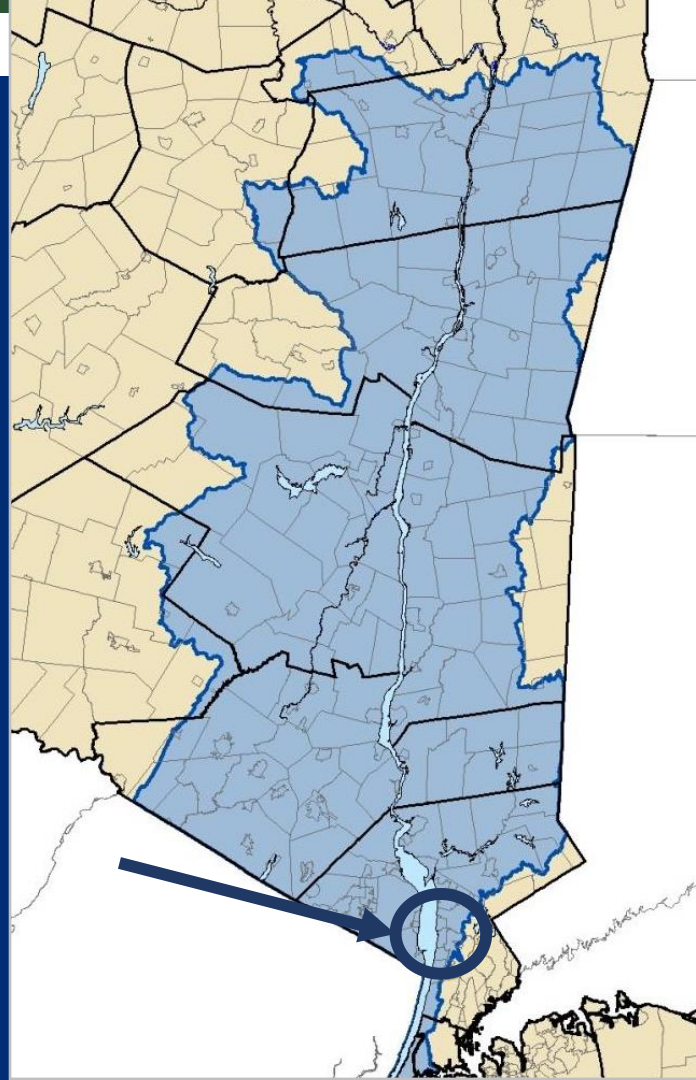
Estimated Greenhouse Gas Emissions by Sector





# CaD Fall 2022 studio focus

## Village of Tarrytown





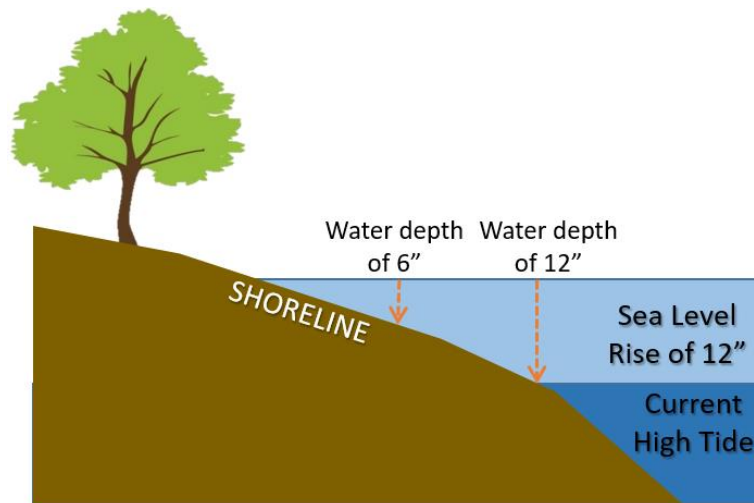
# Tarrytown, at a glance

- Population of ~ 12,000 people
- Social vulnerability index = /10 (6/10 in floodzone)
- 2020 Census: 77% White, 16% Latinx, 7.04% African American, 6.49% Asian, 0.22% Native American
- **Flood insurance:** 99 policies covering \$31m+, 36% of claims are repetitive loss
- Projected new **wetland** with sea-level rise: >150 acres in conflict with development, 70 acres not in conflict
- Directly on the Metro North trainline 25 miles north of NYC
- Native American Weckquaesgeek tribe lived in *Alipconk*, or the "Place of Elms" prior to European settlement



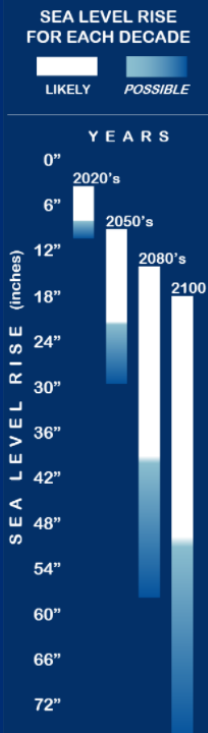
# Flooding and sea-level rise maps

Scenic Hudson mapper



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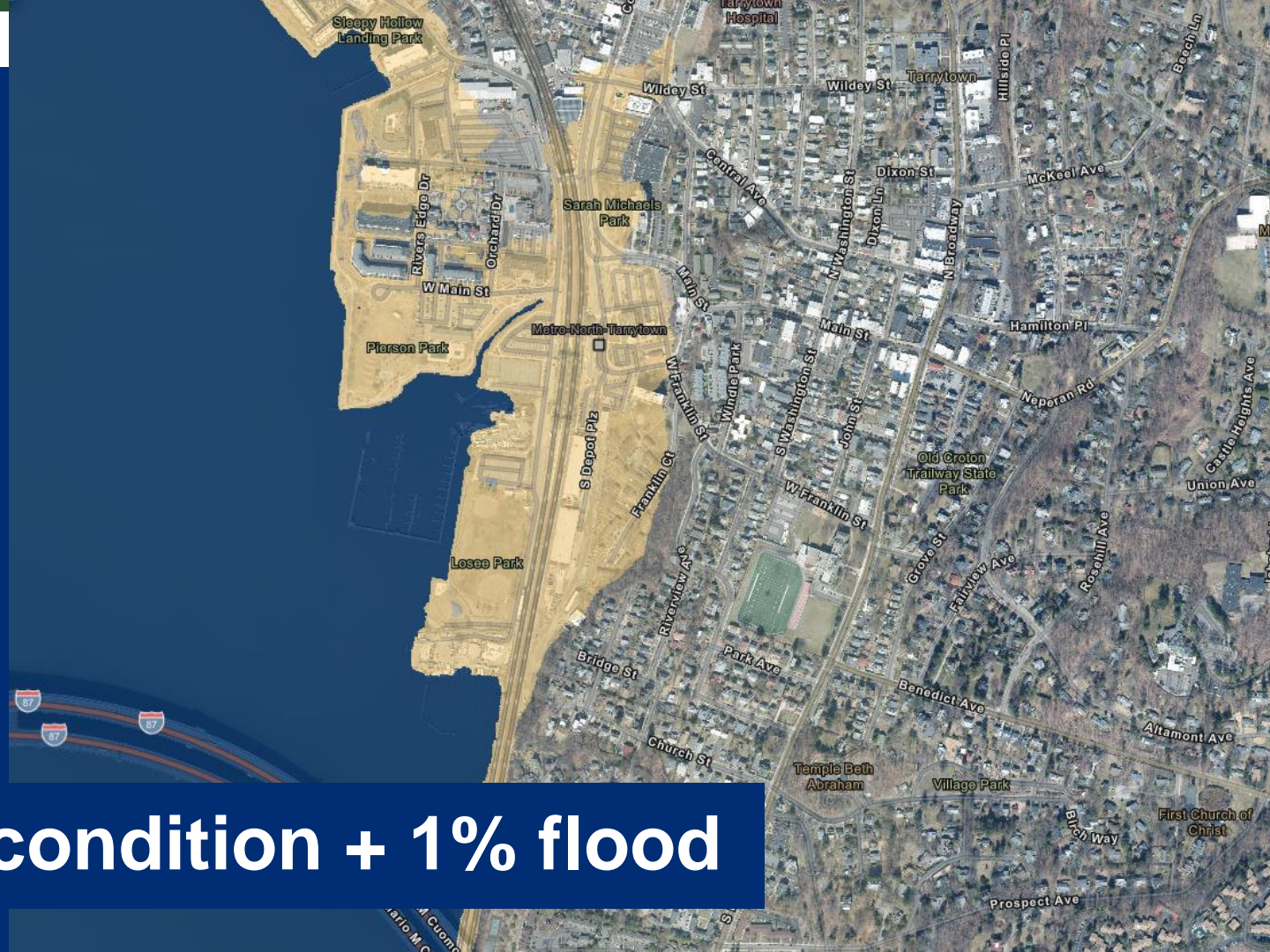
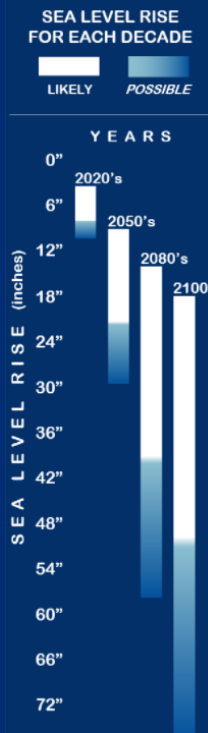
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Current condition







# New York State officially adopted sea-level rise projections in 2017

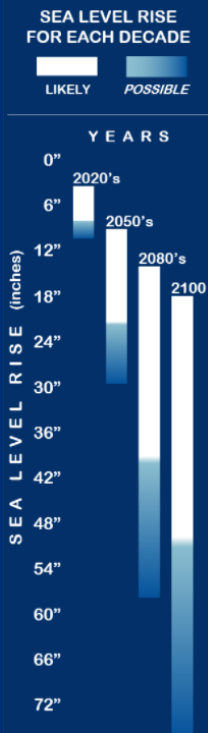
6 NYCRR Part 490, Projected Sea-level Rise. Inches of rise relative to 2000-2004 baseline.

	Region	New York City/Lower Hudson						Mid-Hudson			
	Descriptor	Low	Low-Medium	Medium	High-Medium	High	Low	Low-Medium	Medium	High-Medium	High
Time Interval	2020s	2	4	6	8	10	1	3	5	7	9
	2050s	8	11	16	21	30	5	9	14	19	27
	2080s	13	18	29	39	58	10	14	25	36	54
	2100	15	22	36	50	75	11	18	32	46	71

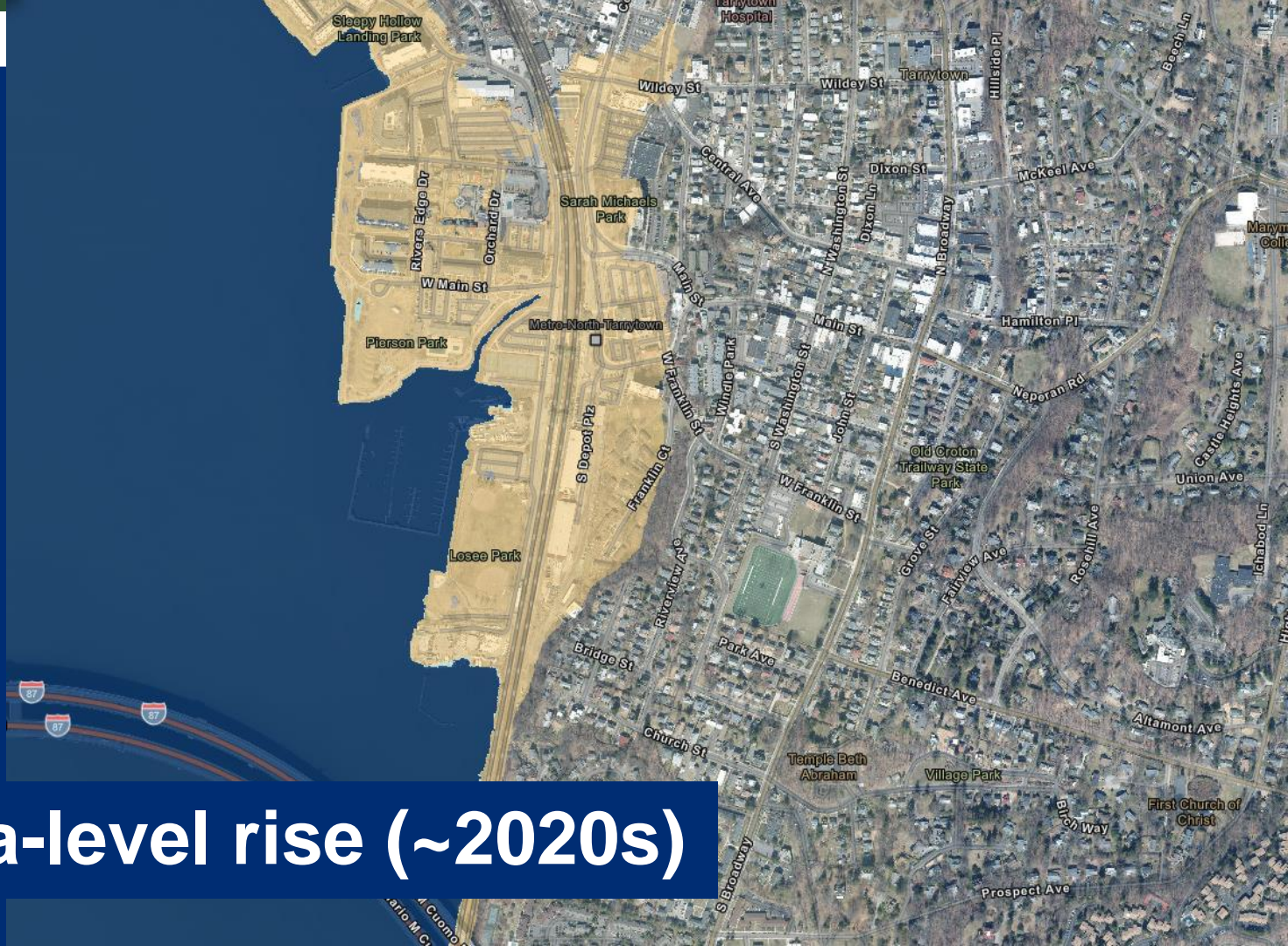


- Up to 75" or more additional sea-level rise by 2100
- Our 1% ("100-year") storm gets bigger and more common
- Considered in state funding and permitting

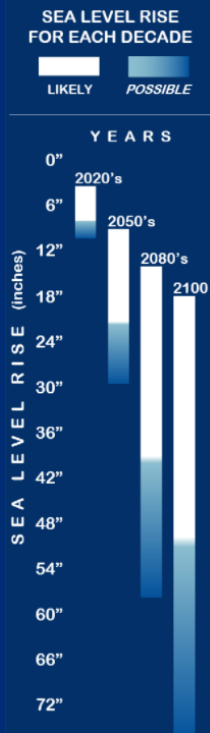




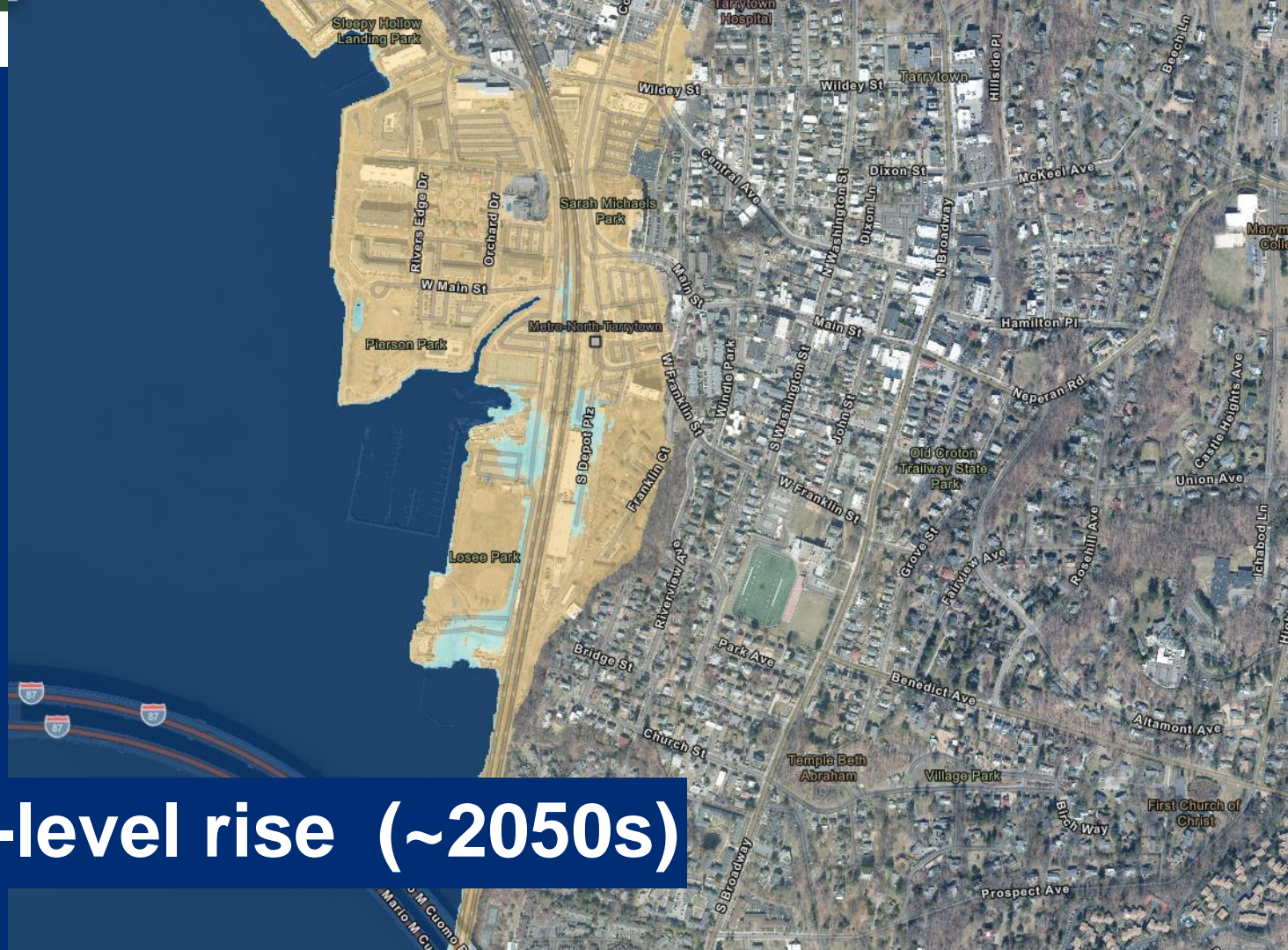
**+12" sea-level rise (~2020s)**



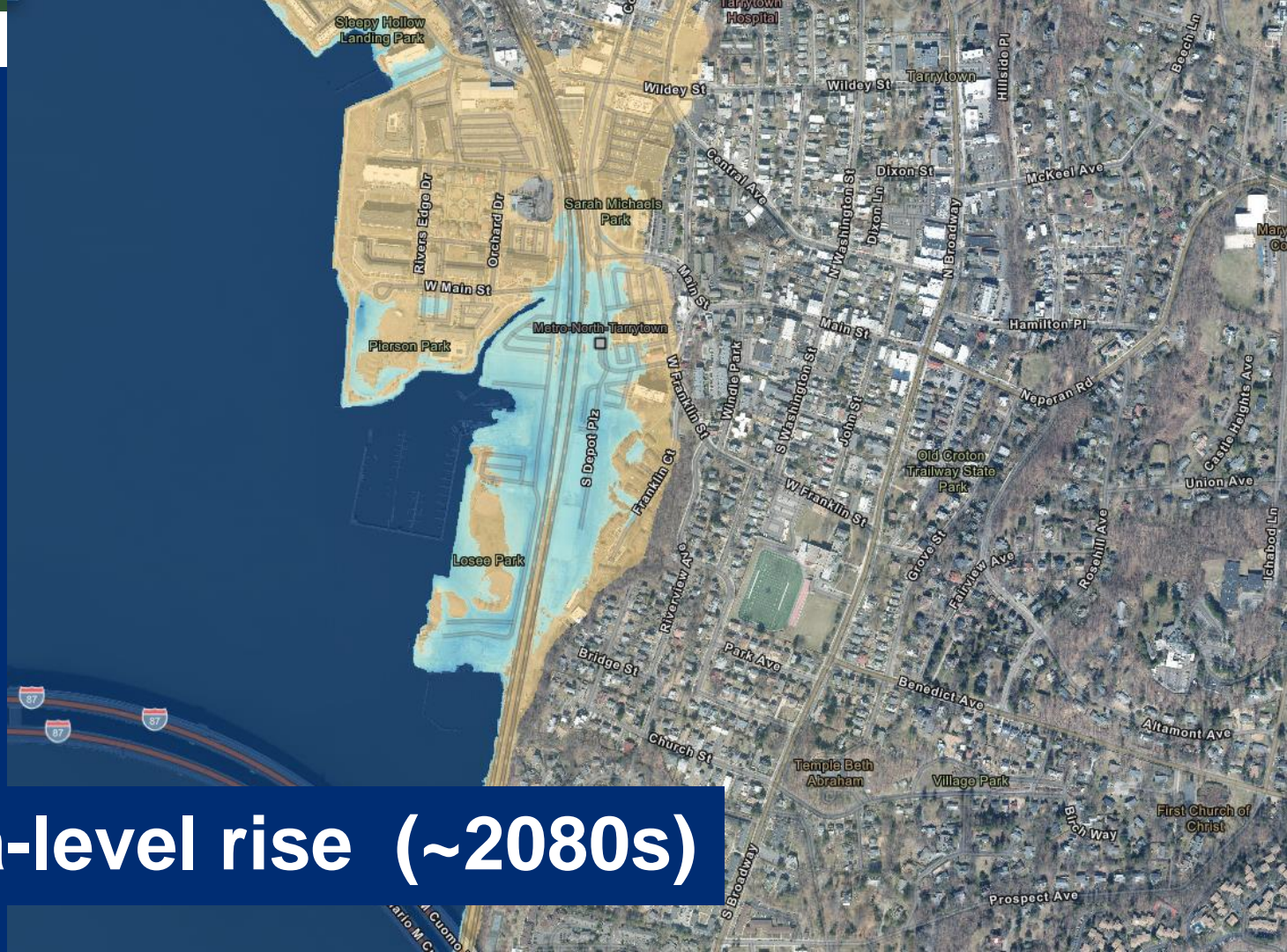
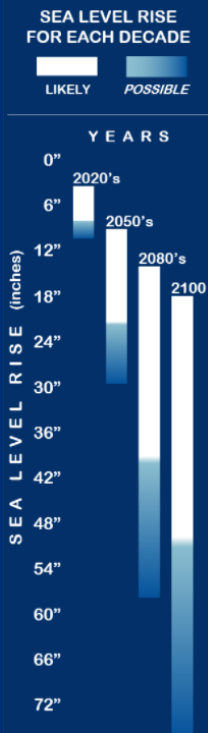




+30" sea-level rise (~2050s)







+54" sea-level rise (~2080s)







# Flood Risk in Tarrytown: Today and in the Future

Estimated damage from flooding and inundation will increase (Columbia mapper)

	10% storm	1% storm	No storm / permanent inundation
Today	\$161,855	\$624,799	N/A
<b>2080s</b>	<b>\$3,154,622</b>	<b>\$5,773,586</b>	<b>\$473,336</b>



# 2050 VISION

**Hudson Valley communities are thriving, beautiful models for adapting to climate change using natural and equitable solutions**



# Climate adaptation is local.

- We can adapt locally, on a community level
- Resilience in the ability to bounce *forward* and thrive under change
- Residents, businesses and communities can increase their resilience







**Nature: the true expression of resilience**

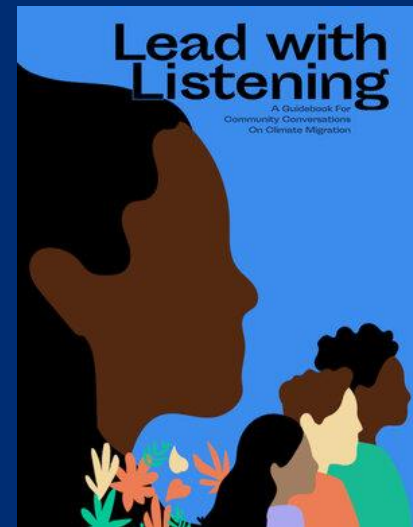
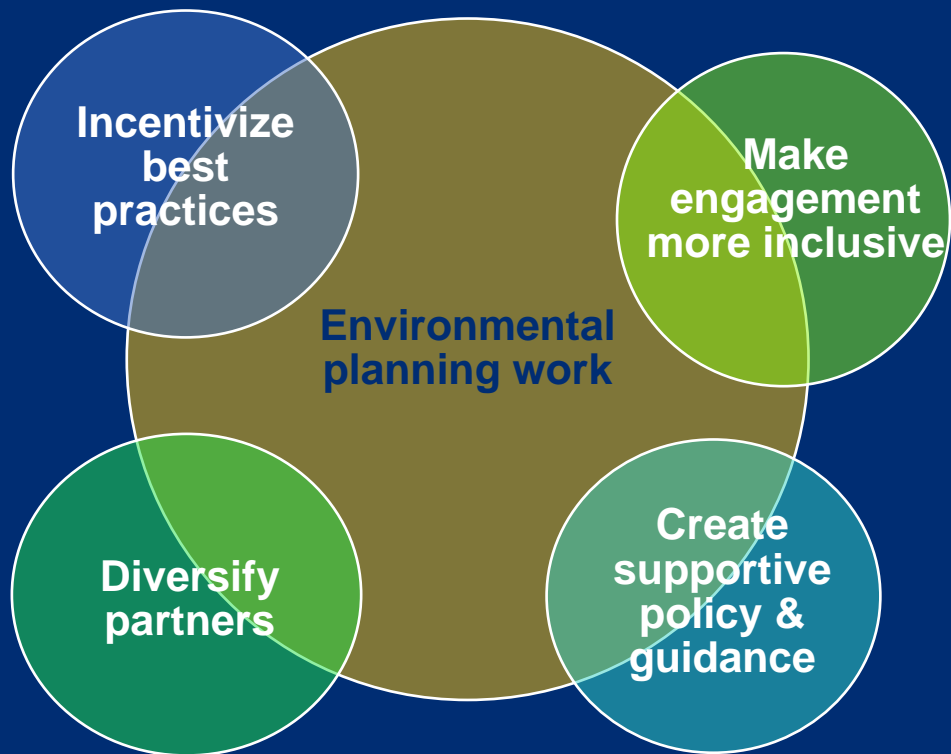
# Caution: Green Gentrification

- Inequities caused by environmental improvement projects
- Greening can increase local property values, thereby attracting wealthier buyers and displacing existing residents
- Disproportionately affecting lower income communities, communities of color, and renters





# Finding where and how we can improve equity in our work





# Over \$170 million available for climate resilience in NYS in 2021

State and federal grants and low-cost loans address the following categories:



Municipal planning



Collaboration and public outreach



Resilient structures



Waterfront economy



Emergency management



Floodplain protection

☒ CFA = grants included in the NYS Consolidated Funding Application



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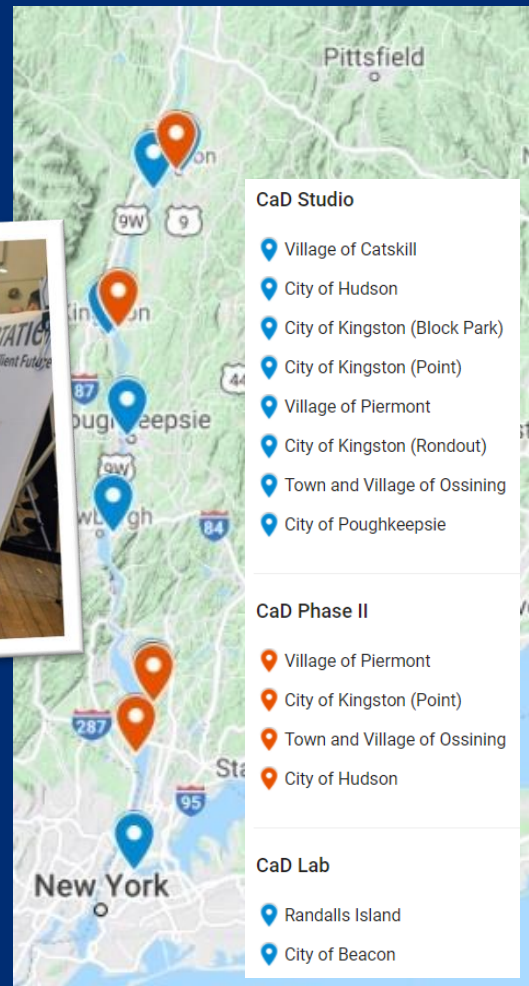
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# Climate-adaptive Design Program

## *Using design to inspire change*

### 3 Phase Process

- 1) CaD Studio: Work with landscape architecture students to start a conversation
- 2) Design Development: Progress concepts into a feasible, community-supported project
- 3) Final design and construction (future concept)
- <https://tinyurl.com/CadHVprogram>





# We're here to support your community's conversation on adapting to climate change

- Adaptation is a sensitive issue
- Smaller cities have limited resources to tackle big issues
- Opportunities to address other issues alongside climate risks
- Landscape architect students help us visualize what the future could look like



**Thank you and  
stay in touch**

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NYS DEC + Cornell WRI

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**Sign up for our Climate Resilience  
Newsletter!**

<http://goo.gl/6dwphW>

**Funding climate adaptation & resilience**

<https://tinyurl.com/NYSFunding>

**Resources for Adapting**

<https://tinyurl.com/NYresilienceresources>



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# Thank you + let's stay connected

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