



NJ PACT Stakeholder Session

# Municipal Officials

New Jersey Department of Environmental Protection  
October 1, 2020

# NJ PACT: OVERVIEW

Executive Order 89



Executive Order 100



Administrative Order 2020-01



Land Use Rules FHA, CZM, FWW- Stakeholdering and Revision

# Impacts of Climate Change

- NJDEP's Scientific Report on Climate Change is consistent in stating the negative economic impacts that the effects of climate change will have on the State and its communities.
- Impacts such as ocean acidification, loss of forest due to pests and increase risk of fires, loss of wetlands, and reduced agricultural production due to drought, among others, all affect those communities who rely on those resources as an economic engine.
- By addressing climate change now through these rules, the State can attempt to reduce the negative economic impact that climate change will have on individual communities in the future by preserving and protecting resources now.





# Impacts of Climate Change

- NJ currently ranks as the third highest state in paid NFIP claims due to the number of people and properties at risk, having been paid over \$6 billion since 1978.
- By better managing development in flood prone areas the number of properties that would require flood insurance would be reduced, thus saving the property owner money.





# Objective

**To help ensure that local governments and communities can protect their existing and future facilities, assets, and infrastructure from climate threats and increase overall resilience.**



# Guiding Principles

1. **Develop** regulatory standards that are commensurate with the anticipated level of risk
2. **Provide** tools to help homeowners, developers, and public entities make informed decisions about their investments
  - Property owners and public agencies should inventory their investments to determine vulnerability and risk (a.k.a. “don’t wait for the State”)
  - Local communities can adopt higher resiliency standards
3. **Evaluate**
  - The intended use of a proposed structure (public, private, recreational, etc.)
  - The criticality of the proposed structure (schools, hospitals, evacuation routes)
  - The likelihood the structure is proposed in an area that will be inundated during its anticipated lifetime – either by daily tides or in flood conditions



## GOAL: RESILIENCY

**NJDEP defines “resiliency” as the ability of a community to adapt and recover readily to adverse climate conditions both present and future.**

### Discussion

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**How would you interpret “resiliency” for your community?**

# GOAL: RESILIENCY

## Discussion

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- Have you seen an increase in impacts due to climate change, such as more frequent “sunny day” flooding in your community or expanded areas that never previously experienced flooding?
- What has been the effect of such impacts?
- What changes, if any, have you been forced to take to combat these impacts?



# Inundation & Flood Damage

1

Establish a new regulatory area known as the **inundation risk zone** to account for land inundated by SLR

2

Redefine the **tidal** flood hazard area to account for future expansion due to SLR

3

Redefine the **fluvial** flood hazard area to account for future expansion due to increased precipitation and runoff

# Inundation & Flood Damage

Rutgers University's Science and Technical Advisory Panel (STAP) Report indicates a 50% probability that sea level rise will exceed 3.3 feet and a 17% probability that sea level rise will exceed 5.1 feet by 2100 assuming moderate emissions.

## Sea-level rise:

**Table ES-1: New Jersey Sea-Level Rise above the year 2000 (1991-2009 average) baseline (ft)\***

		2030	2050	2070			2100			2150		
				Emissions								
	Chance SLR Exceeds			Low	Mod.	High	Low	Mod.	High	Low	Mod.	High
Low End	> 95% chance	0.3	0.7	0.9	1	1.1	1.0	1.3	1.5	1.3	2.1	2.9
Likely Range	> 83% chance	0.5	0.9	1.3	1.4	1.5	1.7	2.0	2.3	2.4	3.1	3.8
	~50 % chance	0.8	1.4	1.9	2.2	2.4	2.8	3.3	3.9	4.2	5.2	6.2
	<17% chance	1.1	2.1	2.7	3.1	3.5	3.9	5.1	6.3	6.3	8.3	10.3
High End	< 5% chance	1.3	2.6	3.2	3.8	4.4	5.0	6.9	8.8	8.0	13.8	19.6

\*2010 (2001-2019 average) Observed = 0.2 ft

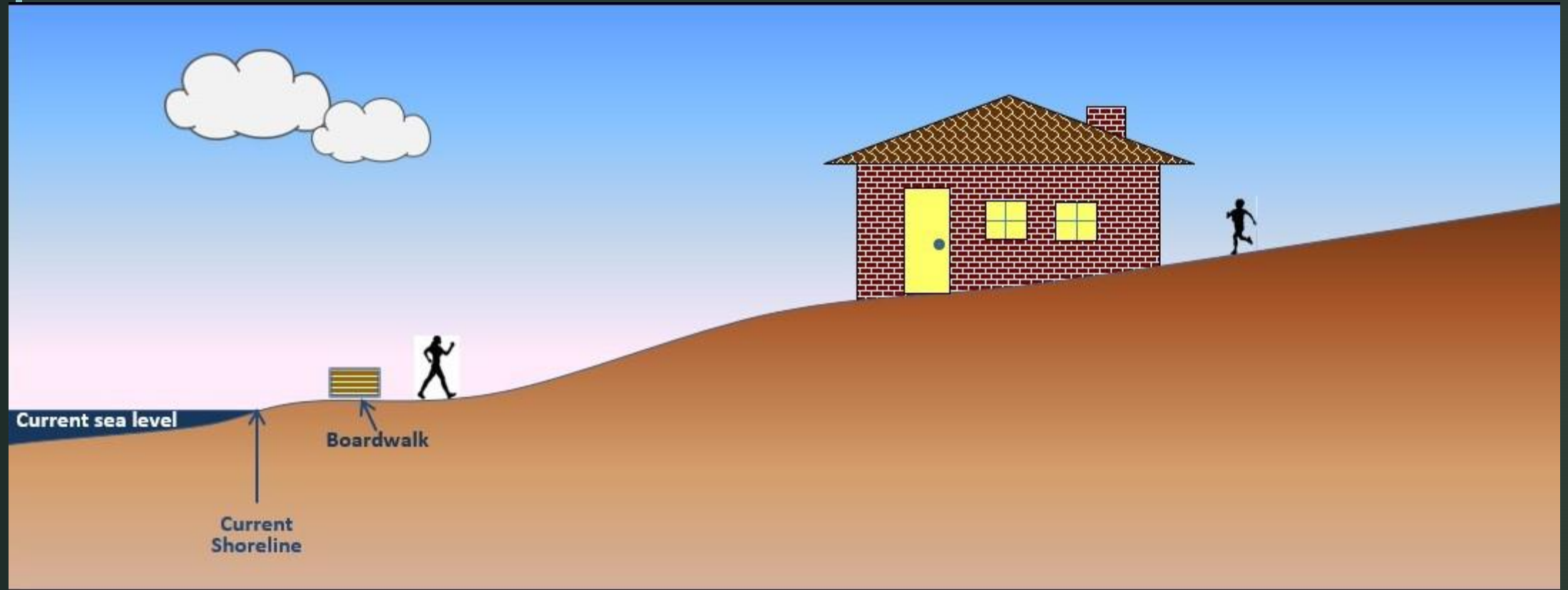


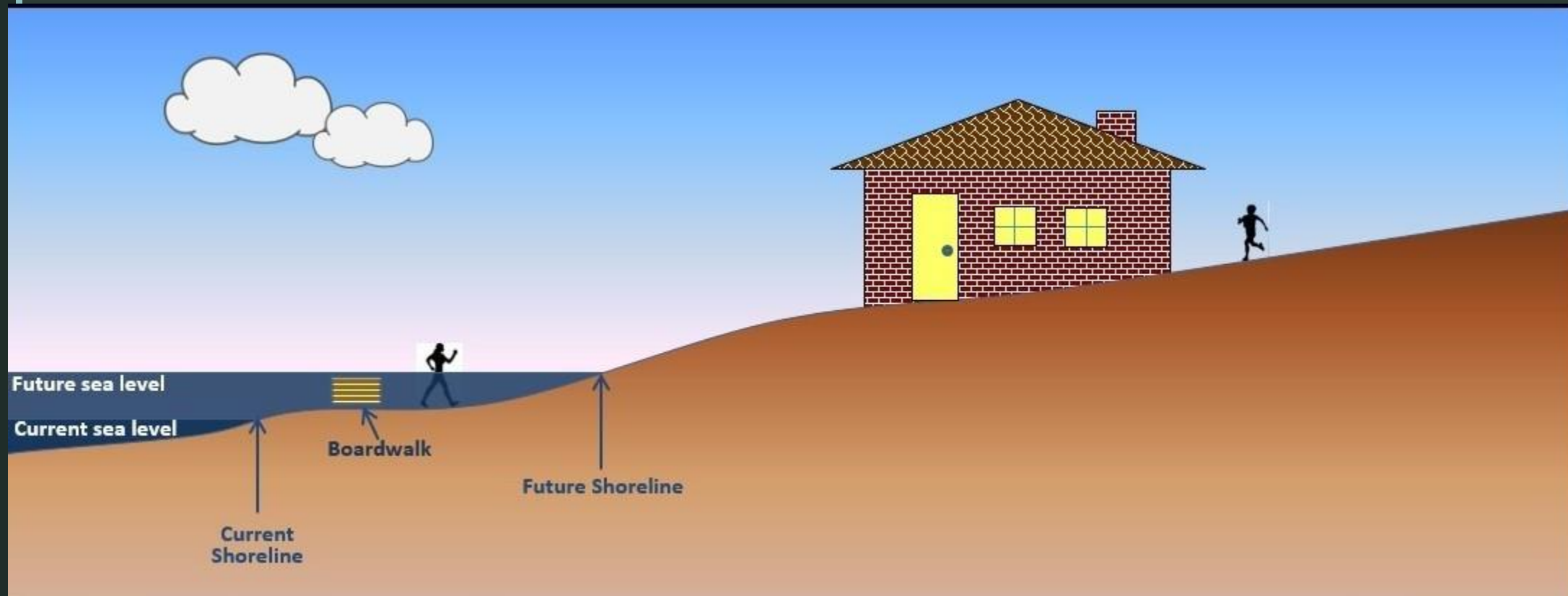
# Inundation and flood impacts

▶ The impact of sea level rise on dry land will change over time.



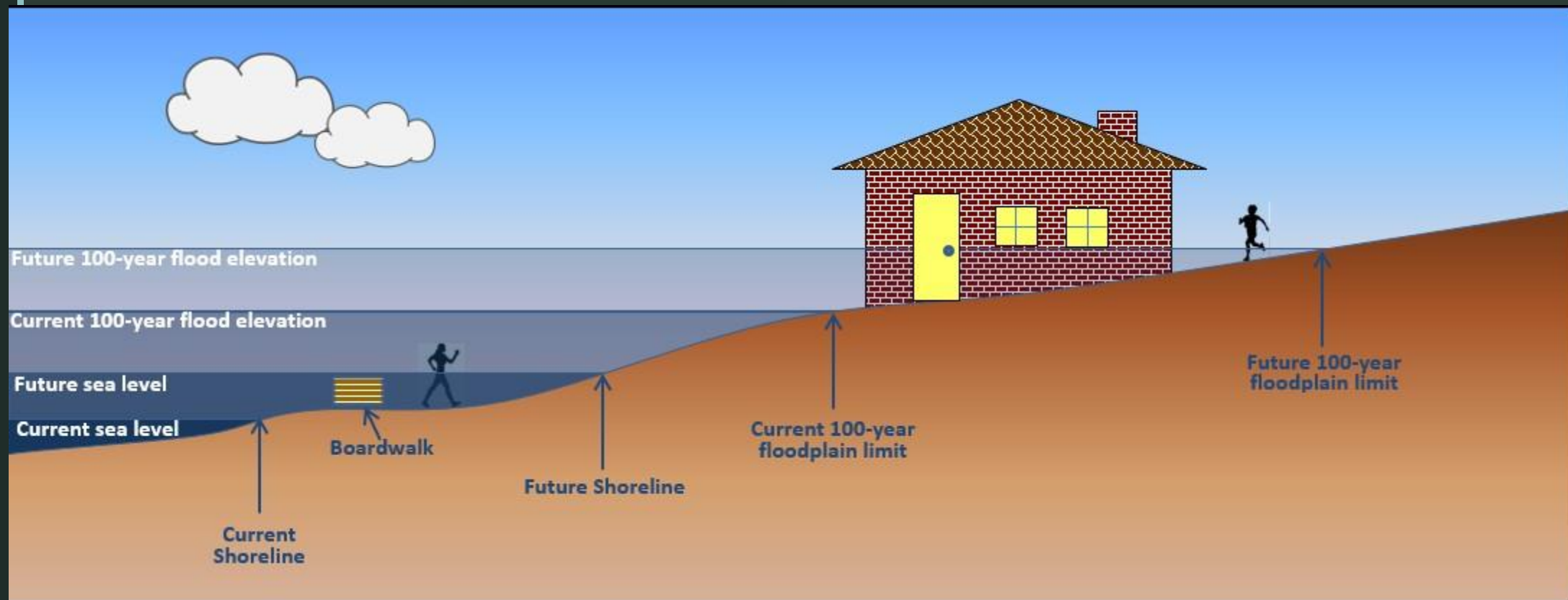


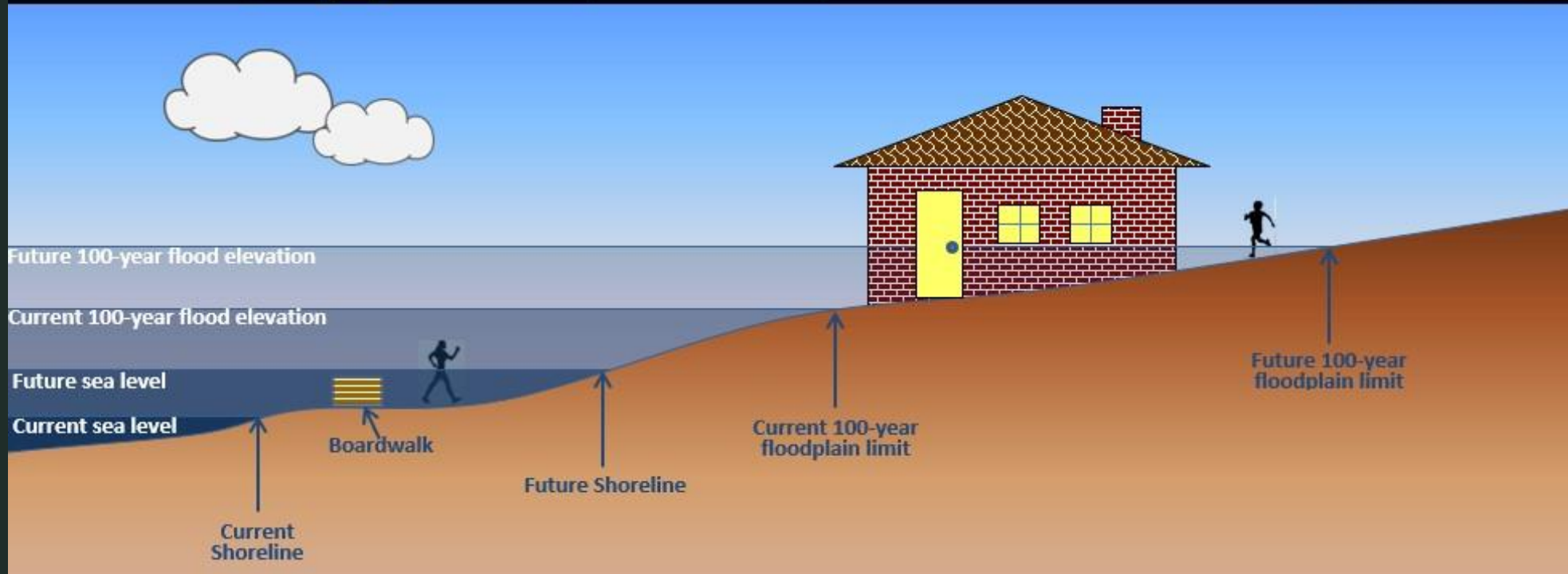
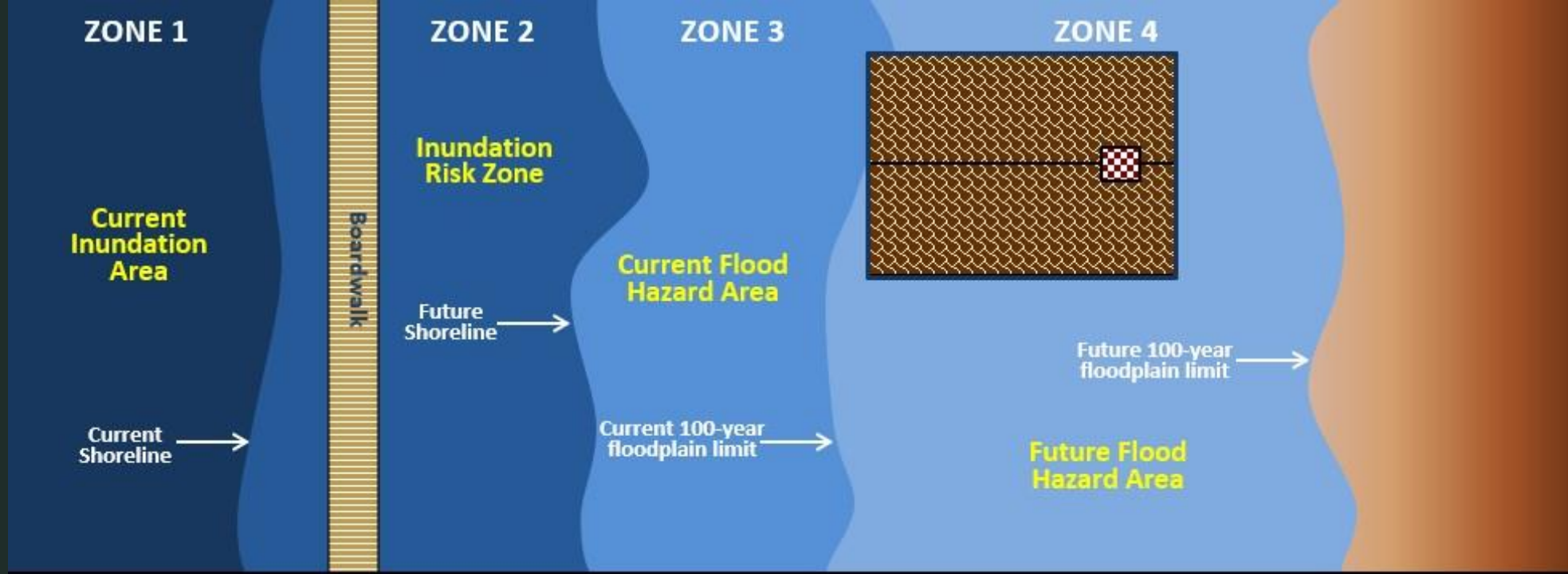






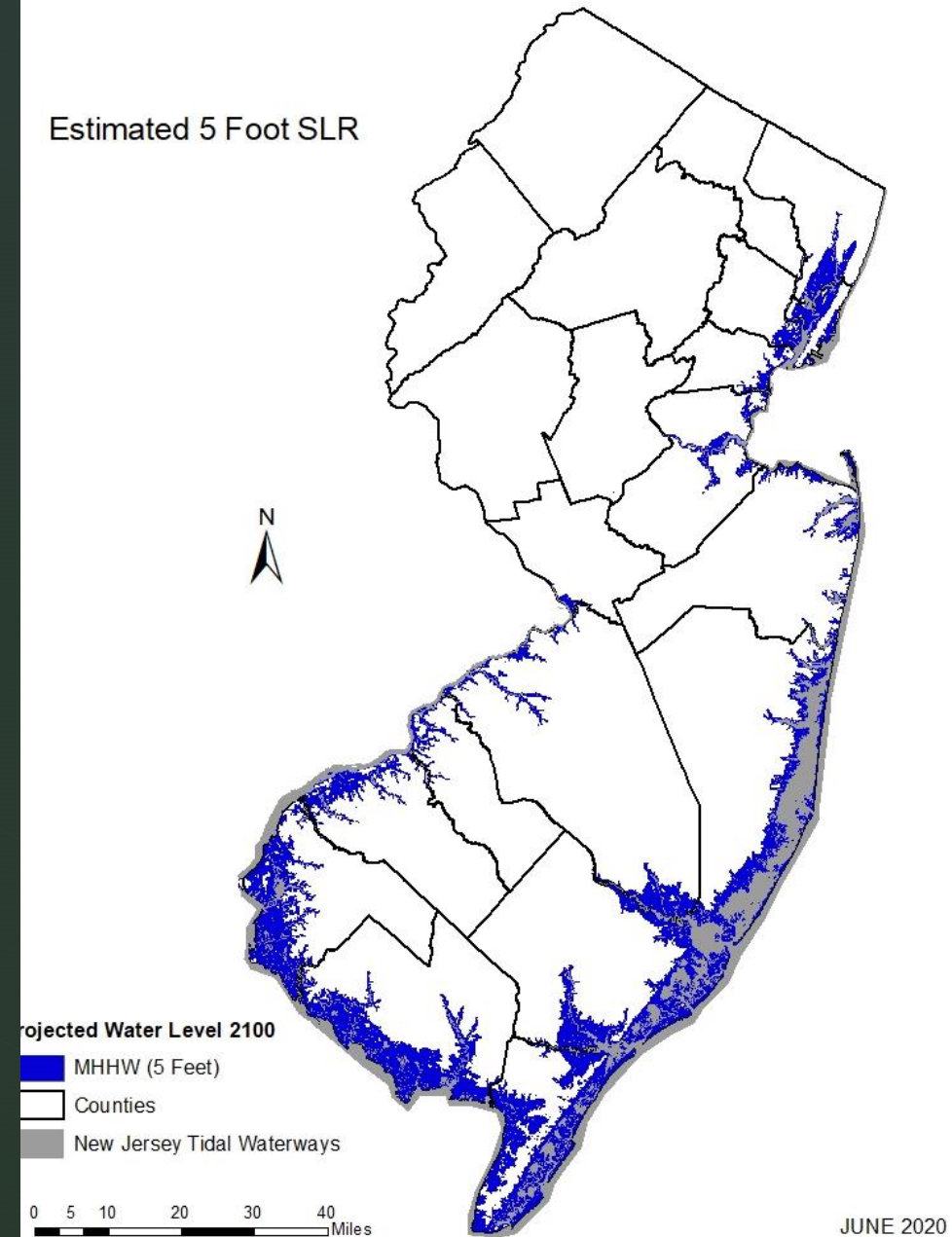






# Inundation Risk Zone

- Consists of land that is now mostly dry but is expected to be inundated by tidal waters at least twice per day, or permanently, by the year 2100.
- Encompasses all land that lies below the IRZ elevation, which is calculated by adding five feet to the elevation of the mean high water (MHHW).
- Development within the IRZ will have more protective standards than the remainder of the floodplain beyond it.



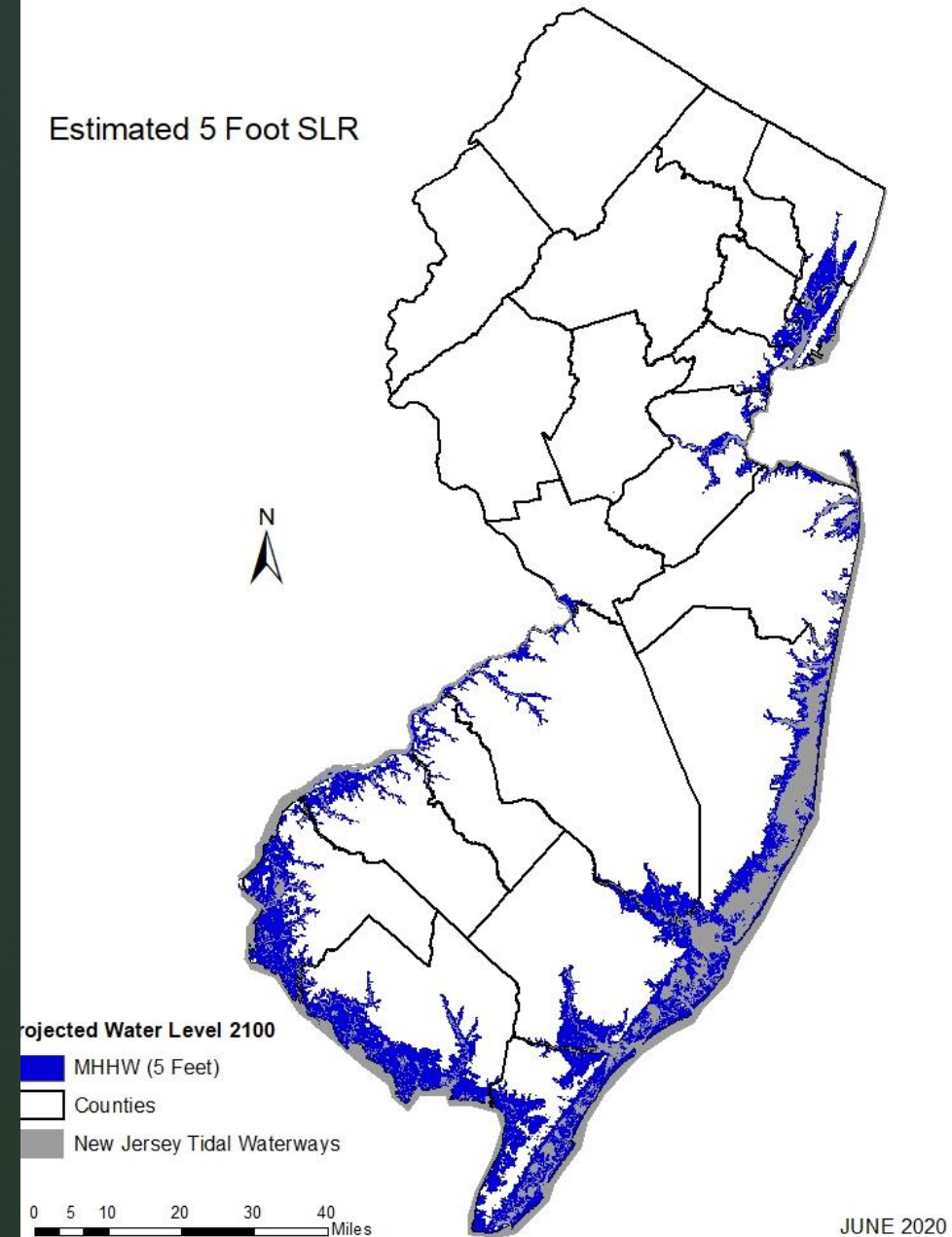
JUNE 2020

This map is for information only, not for regulatory purposes.  
FEMA Flood Zones not included in this review.



# Inundation Risk Zone

- Examples of uses appropriate for the IRZ include recreational uses such as parks, trails, and boardwalks, shoreline protection and environmentally beneficial projects, water-dependent activities, and activities with short lifespans, such as solar panels.
- New buildings and critical infrastructure would generally be prohibited.



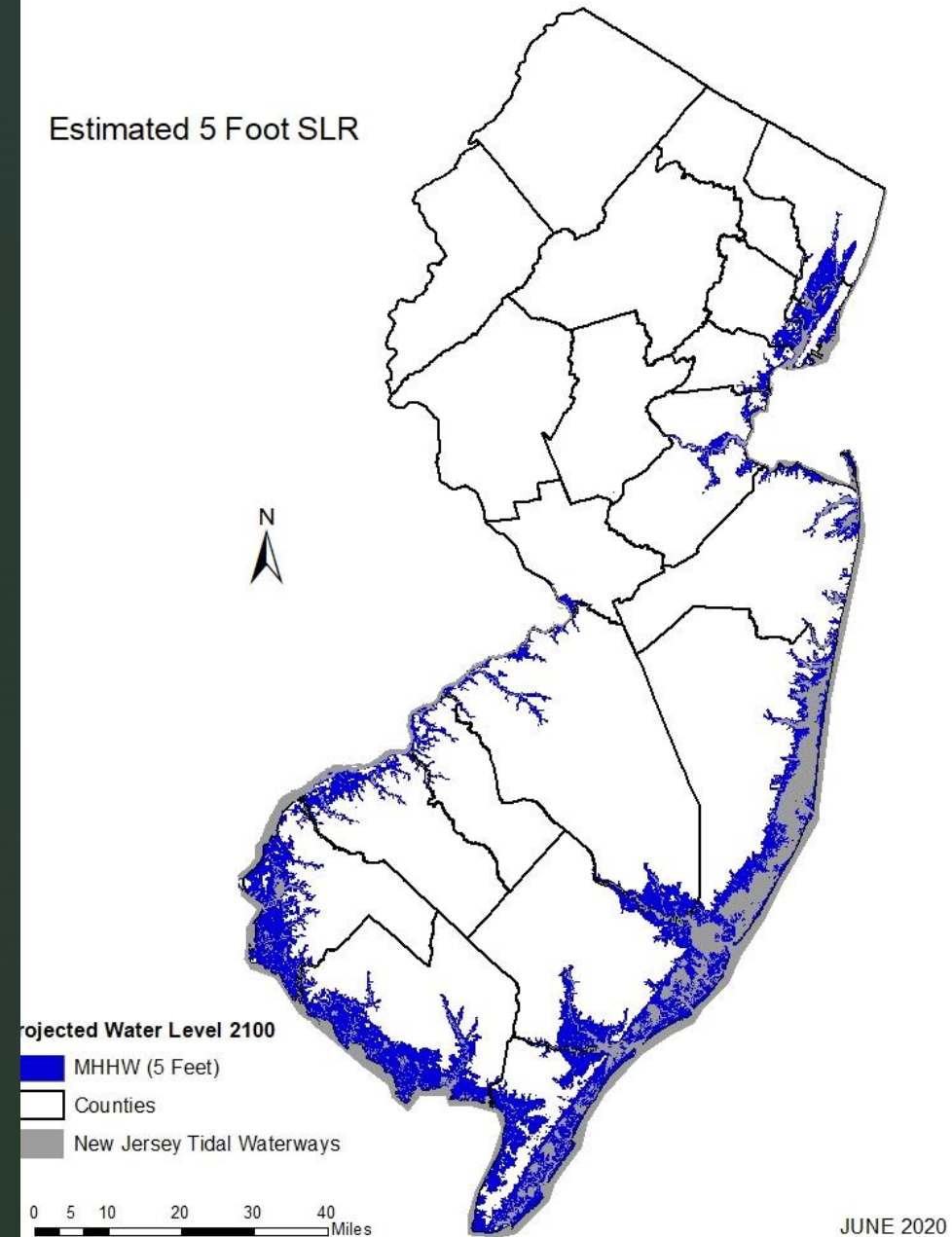
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# Inundation Risk Zone

## Discussion

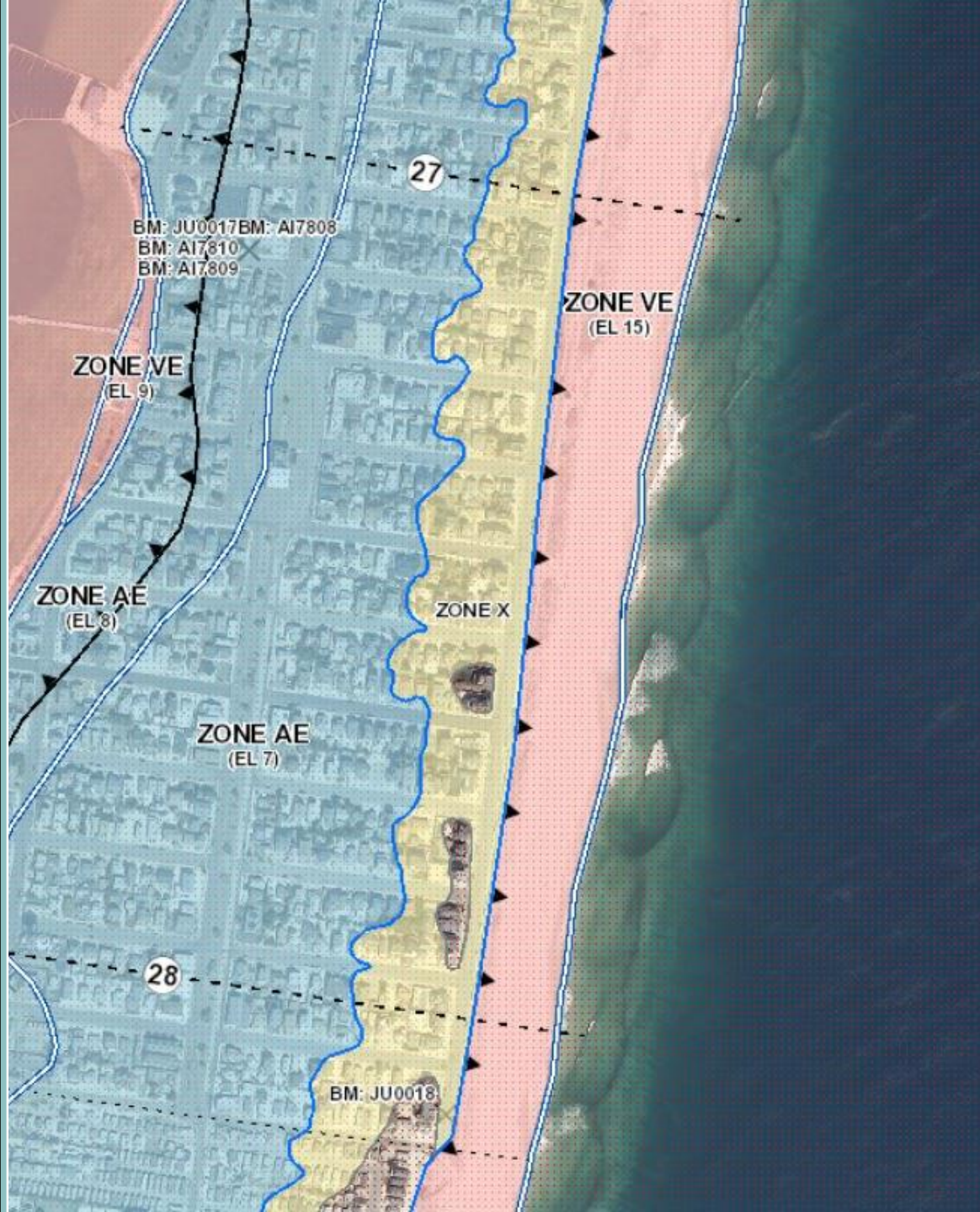
- What concerns would you have regarding the adoption of new standards for development within the IRZ?
- What type of flexibility would be appropriate for development in the IRZ?



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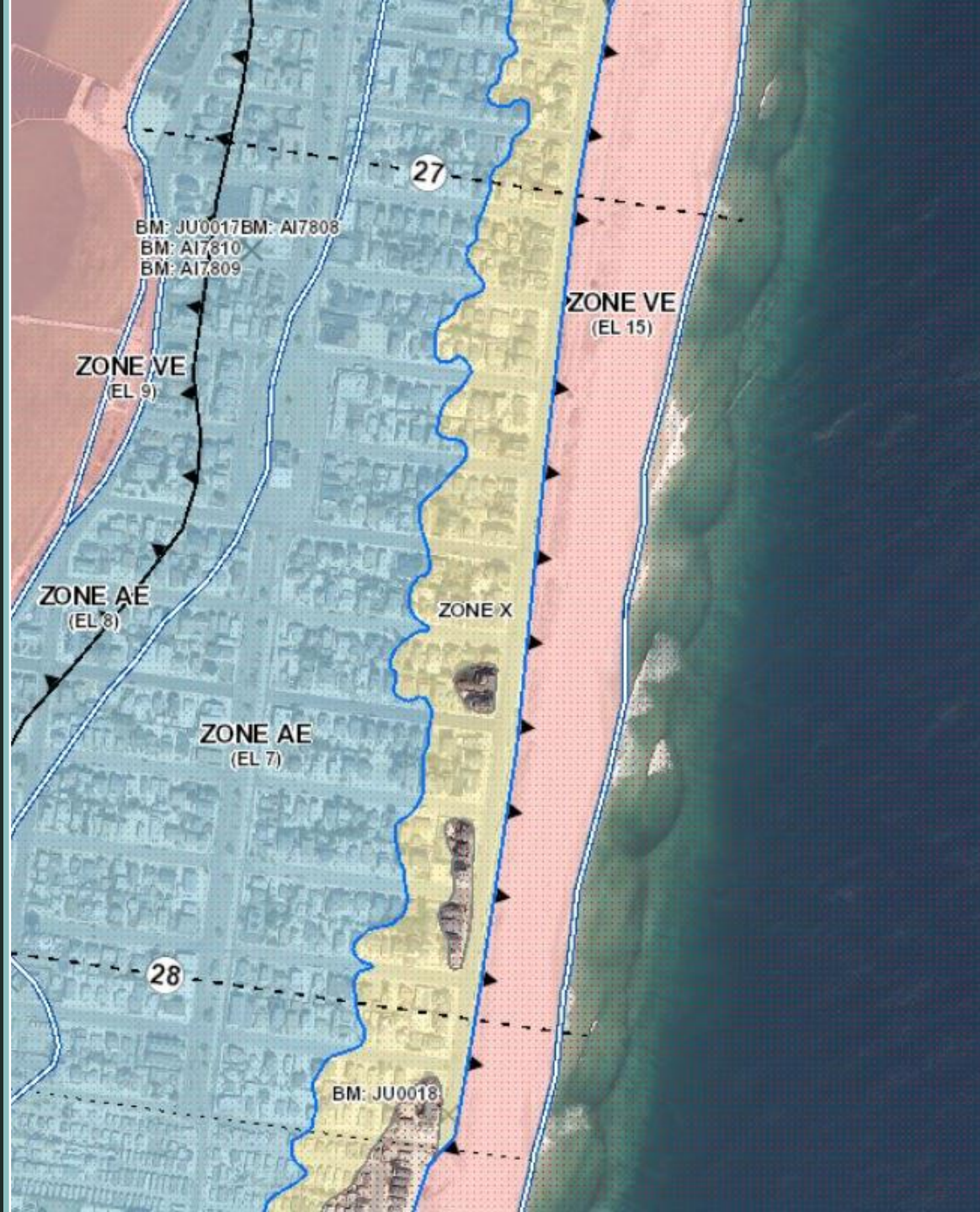


## Tidal Flood Hazard Areas

- Existing tidal floodplain is based on the higher of FEMA's effective or preliminary 100-year flood elevation.
- FEMA mapping is based on data that considers only past flooding events and does not anticipate a changing climate.
- Proposal would add 5 feet to FEMA's flood elevation in order to account for expected rises in sea level.



# Tidal Flood Hazard Areas



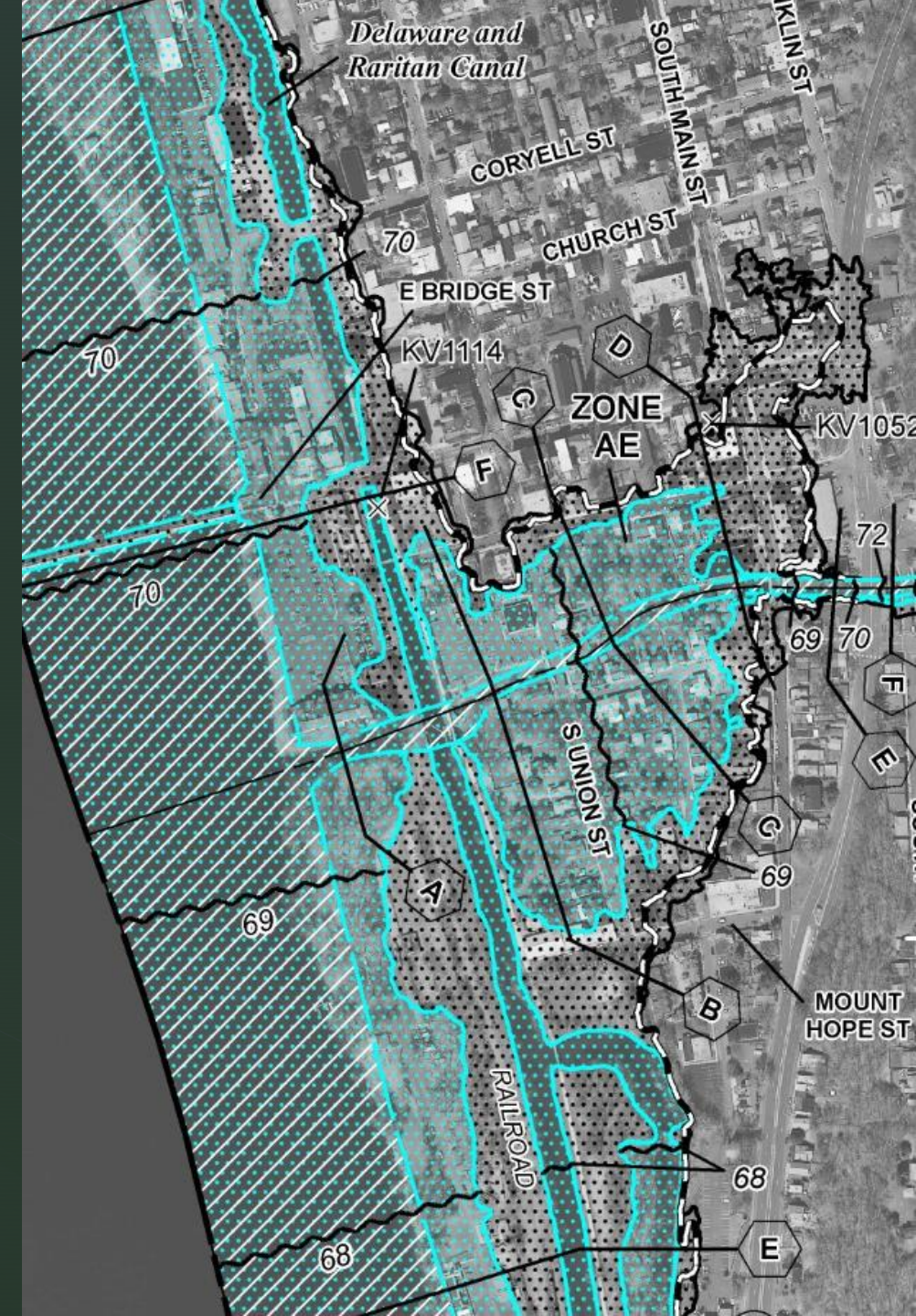
## Discussion

- What concerns would you have regarding the proposed expansion of the tidal flood hazard area?



# Fluvial Flood Hazard Areas

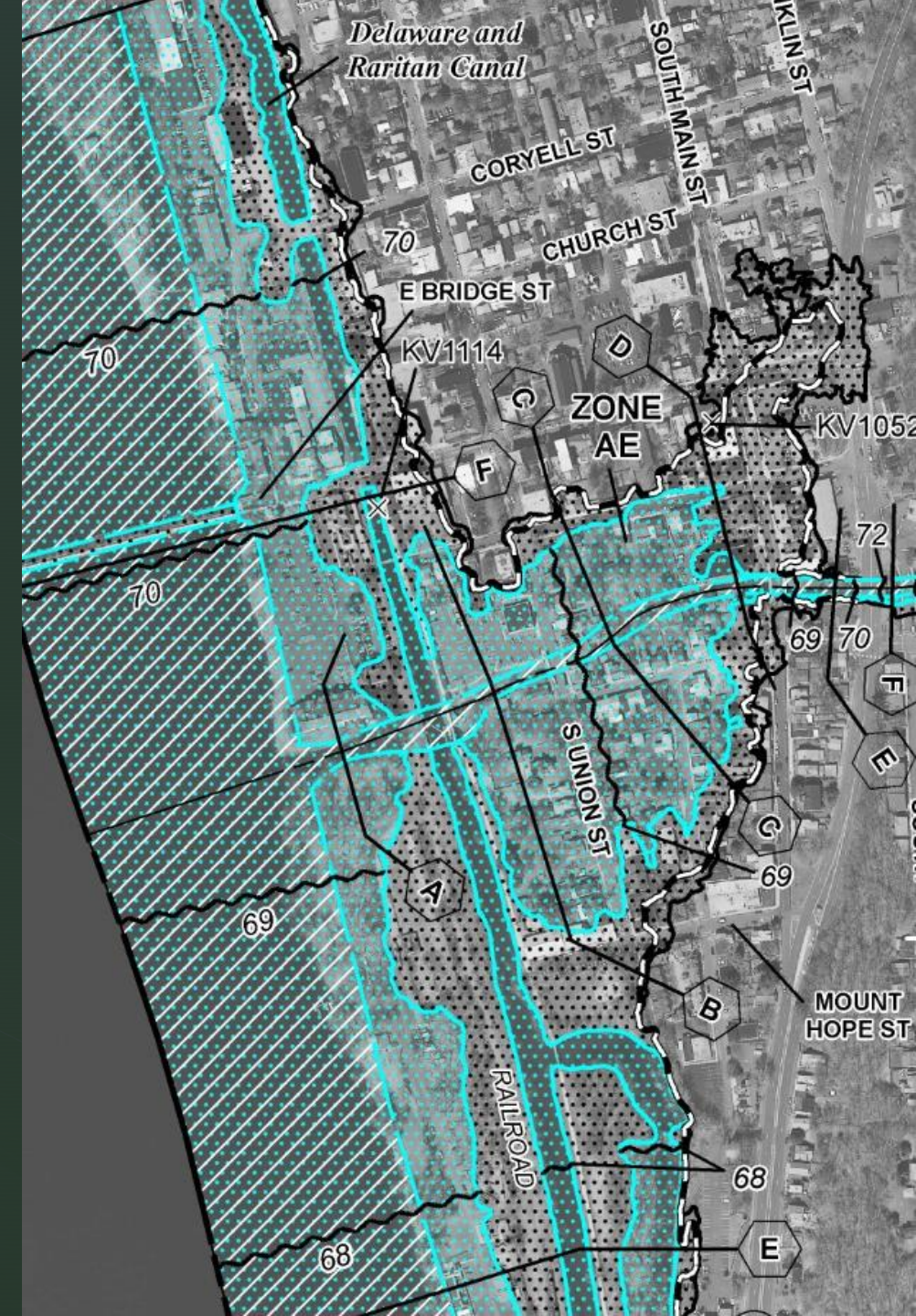
- Existing fluvial floodplain is based on the higher of FEMA's effective or preliminary 100-year flood elevation with a 1-foot factor of safety (unless NJDEP flood study indicates an even higher design flood elevation).
- FEMA and NJDEP flood mapping is based on data that considers only past flooding events and does not anticipate a changing climate.



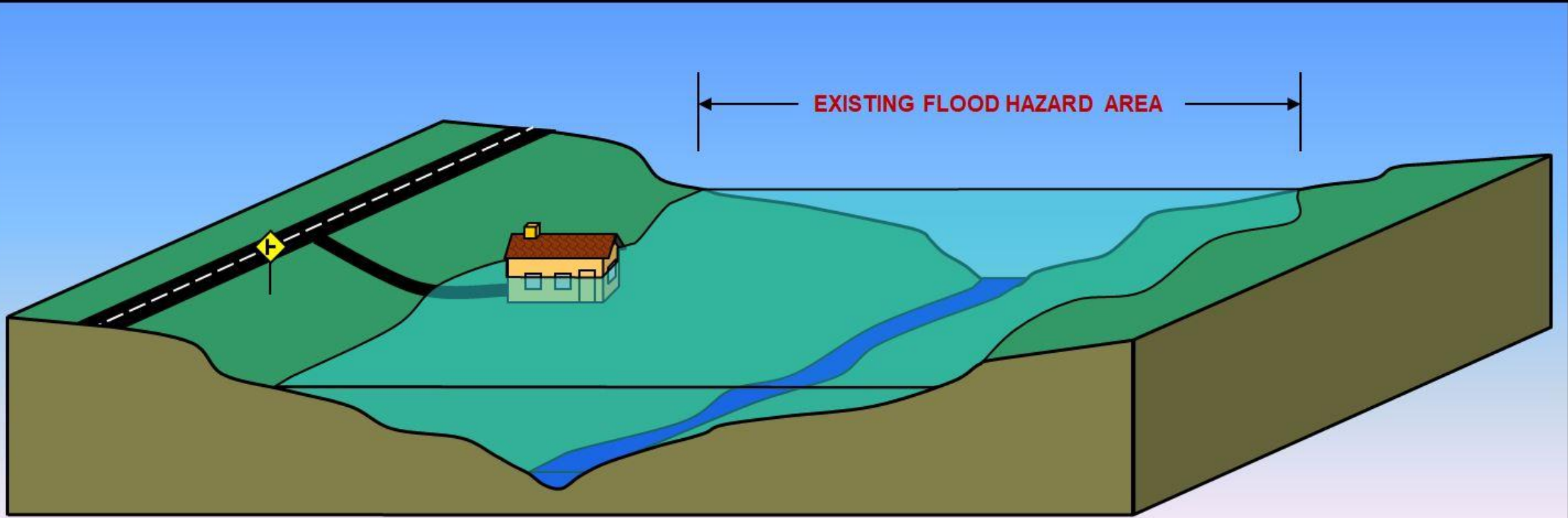


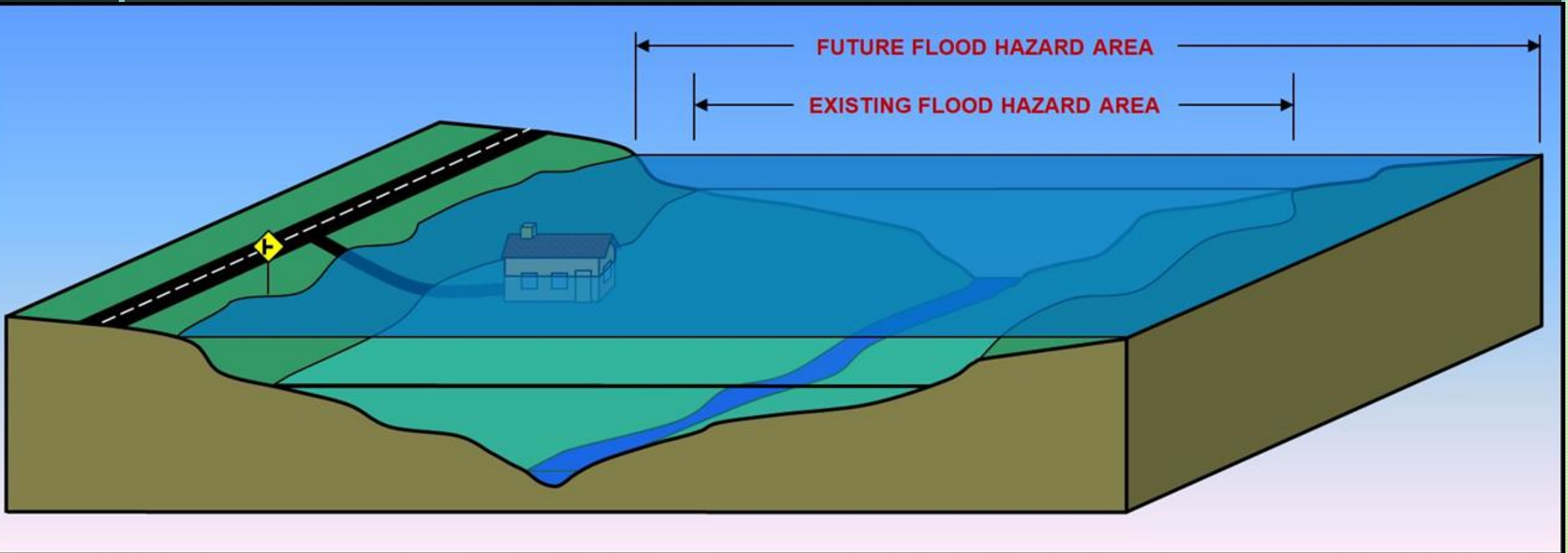
# Fluvial Flood Hazard Areas

- A recent New York study concludes that precipitation intensities in northern New Jersey are likely to increase by as much as 35% by 2100.
- NOAA's current 500-year 24-hour precipitation intensity is roughly 38% higher than today's 100-year 24-hour storm, the 500-year flood is a suitable surrogate.
- Along waters for which FEMA mapping is not available, the predicted 100-year rainfall of the year 2100 would be used to calculate the future regulatory floodplain, plus an additional 25%.









## Discussion

What concerns would you have regarding the proposed expansion of the fluvial flood hazard area?

# Protecting Critical Facilities and Infrastructure



NJDEP's proposed rulemaking would:

- Create a new definition for critical facilities and critical infrastructure as informed by the NFIP and Office of Emergency Management definitions.
- Amend the definition of critical building to match the Flood Design Classes published by the American Society of Civil Engineers.
- Adopt more protective design and construction standards for critical facilities and infrastructure, which are commensurate with the level of anticipated risk, such as requiring a higher elevation and/or floodproofing.



# Protecting Critical Facilities and Infrastructure



## Discussion

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- Which facilities and infrastructure in your community would you classify as critical?
- What would help these be more resilient to a changing climate?
- Have you undertaken an assessment of your community's assets and infrastructure to determine its vulnerability to threats from climate change?

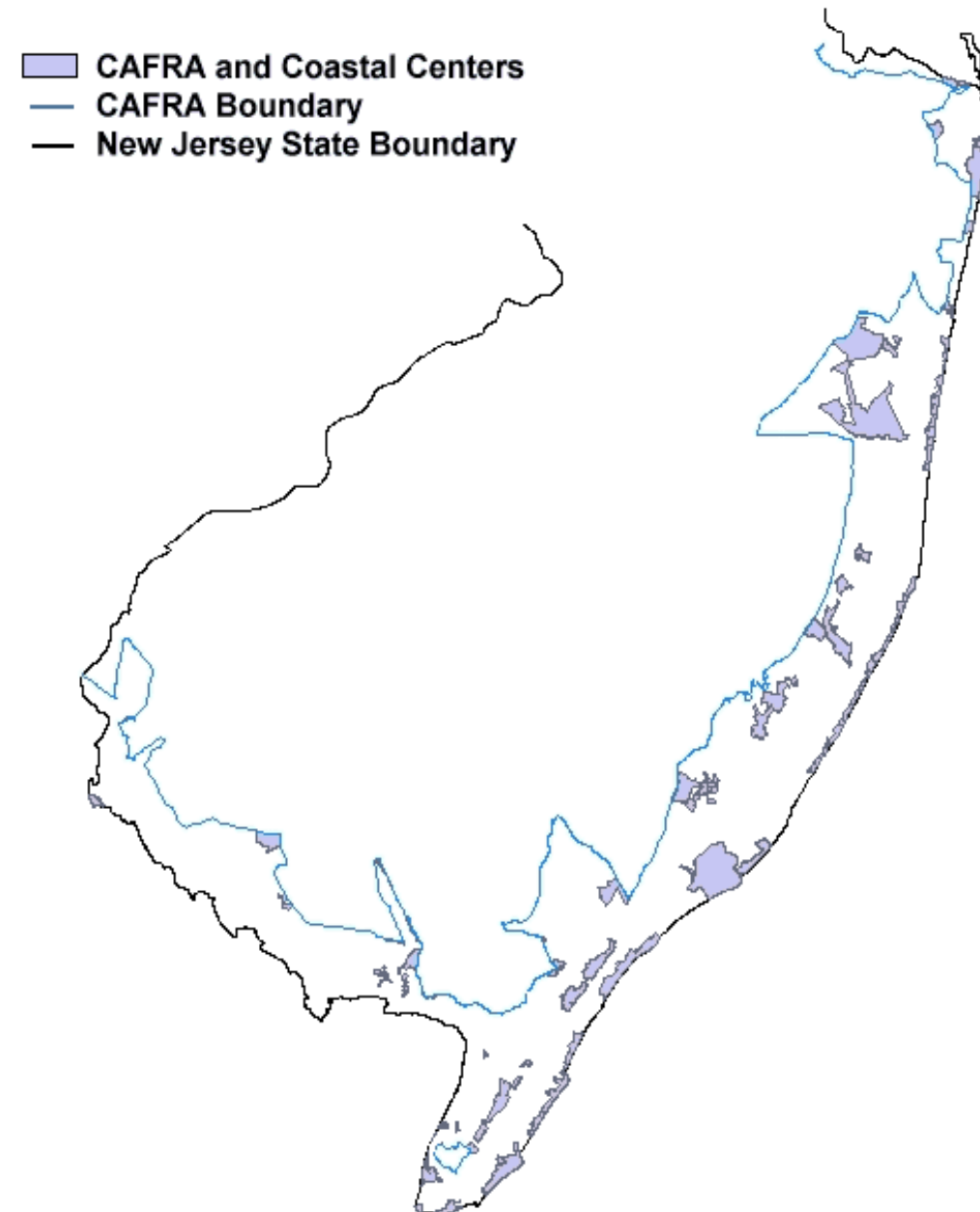
# CAFRA

- The non-mainland coastal centers were delineated by the Department and did not undergo the comprehensive planning associated with the State Planning Commission's Plan Endorsement process.
- The Department is considering repealing the non-mainland coastal centers, and instead have those municipalities go through the plan endorsement process.

## Discussion

- What are your thoughts regarding these ideas?

(State boundary shown for reference only)





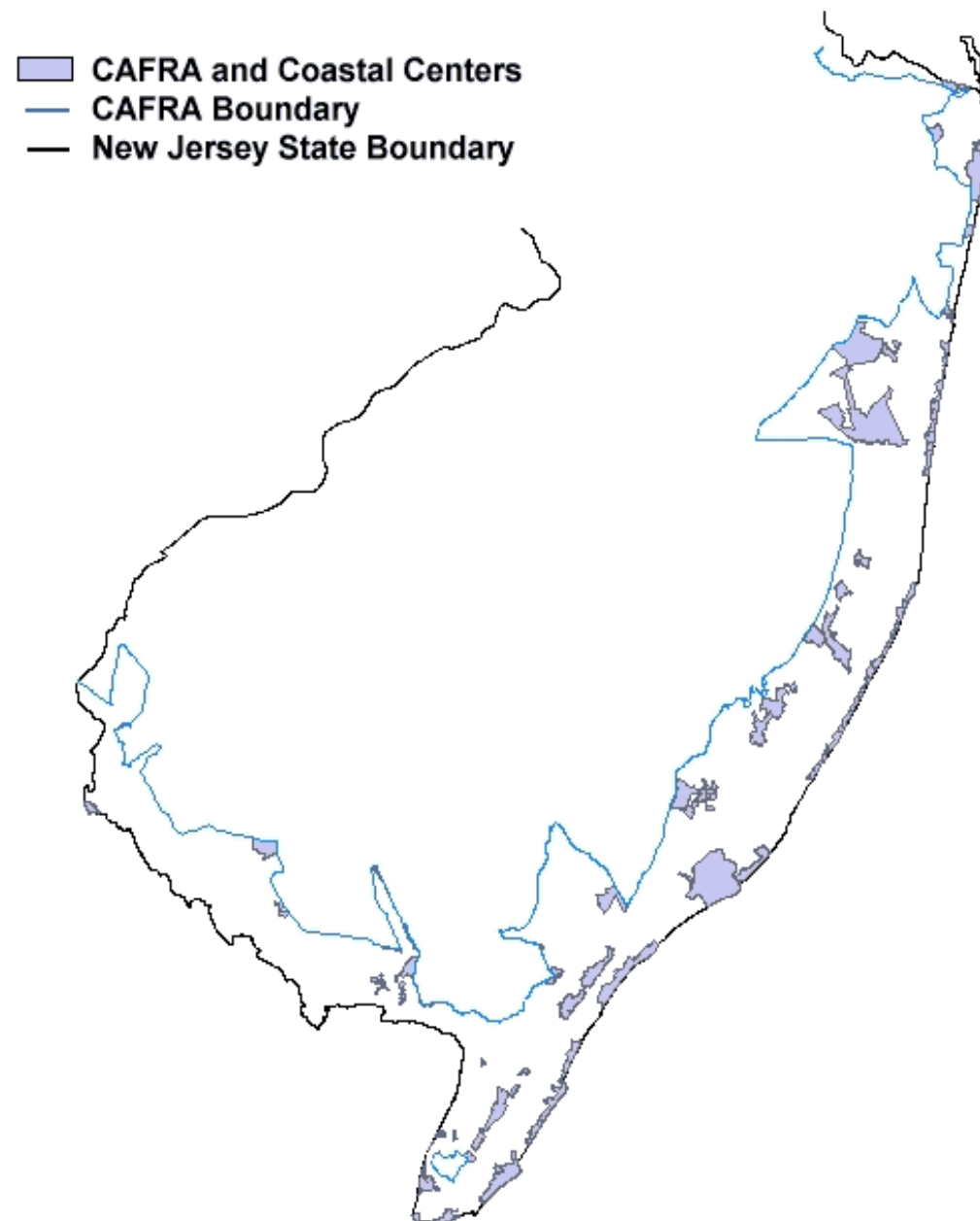
# CAFRA

- State Planning Commission centers, cores, nodes have expiration dates, whereas the CAFRA centers, cores and nodes do not.
- Forces municipalities to go back through the process of re-designation.

## Discussion

- **Should the Department add expiration dates for CAFRA centers, cores and nodes?**
- **If the State Planning Commission revises or adopts a center, core, node or planning area boundary, should it automatically become a CAFRA center, core, node or coastal planning area?**

(State boundary shown for reference only)







## Coastal Buffer Zone

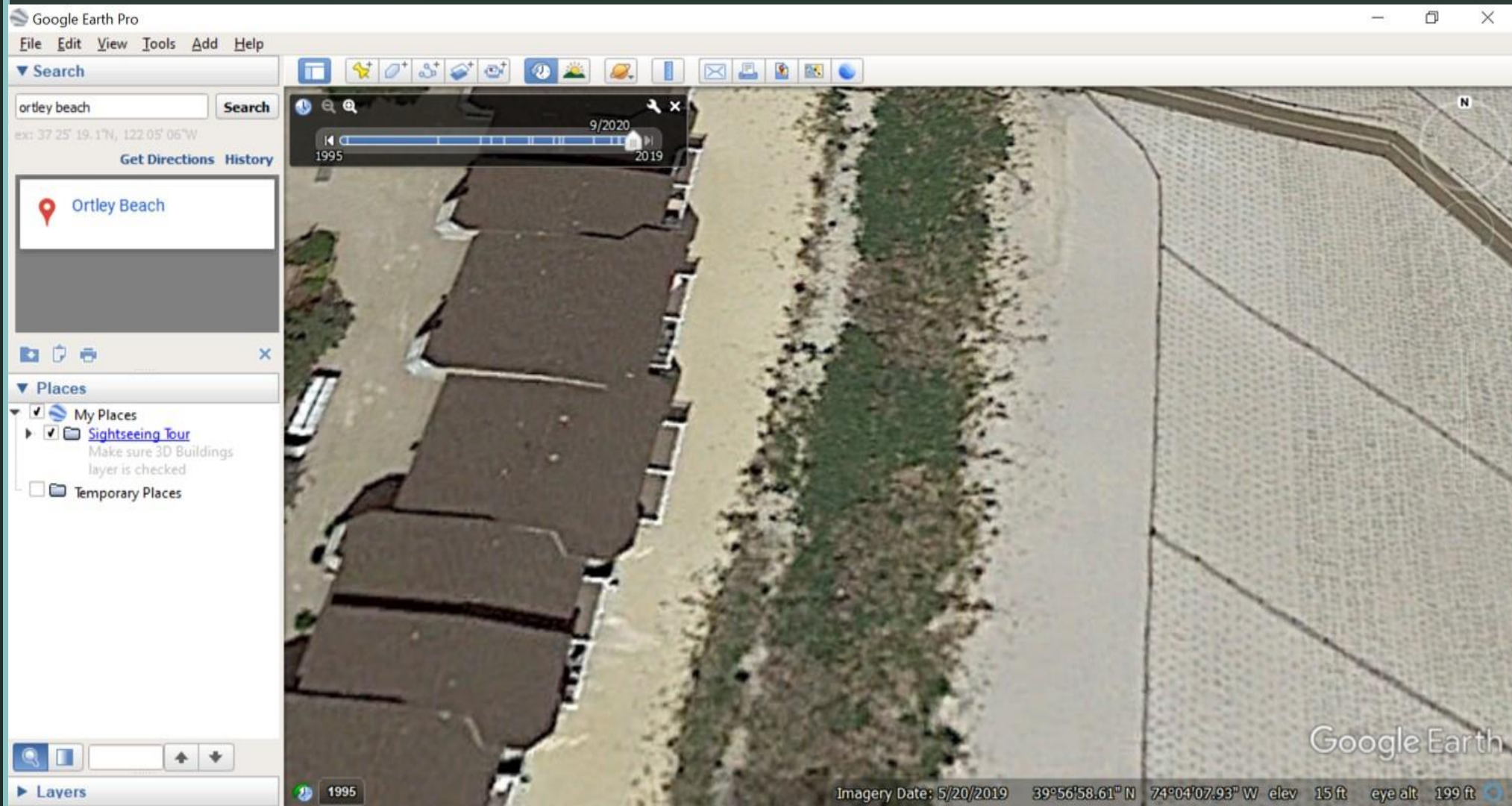
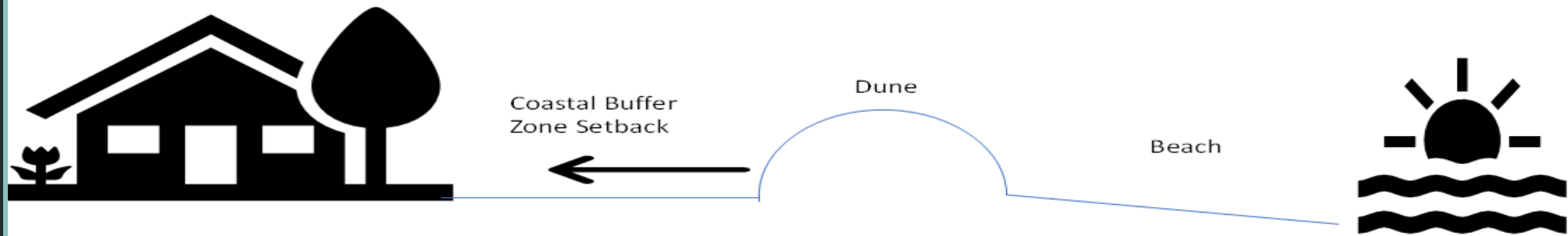
- The CBZ is a new special area being considered that would overlap with the IRZ but would have differing regulatory goals.
- Consists of the land area adjacent to a beach, dune or coastal bluff along the Atlantic Ocean or Delaware Bay/River, that is, or will be, vegetated with native coastal vegetation.
- Acts as a natural transition zone between the beach, dune or coastal bluff and adjacent upland development to accommodate ongoing natural sand exchange and storage to support and sustain the beach and dune system.

An aerial photograph of a powerful ocean wave crashing onto a sandy beach. The wave is a deep blue-green color, curling over the sand. The beach is a light tan color. The sky is a pale blue. The overall image has a dark, moody feel with a greenish tint.

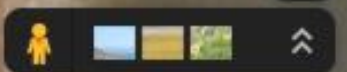
## Coastal Buffer Zone

- The wider a beach or dune system is, and the more space between the sea and any developed or populated areas, the more effective and efficient the system will be at reducing the impacts of coastal hazards, provide for coastal habitat and erosion and flood control benefits to promote resiliency while we see increased storm intensity and erosional impacts due to sea level rise.











# Coastal Buffer Zone

## Discussion

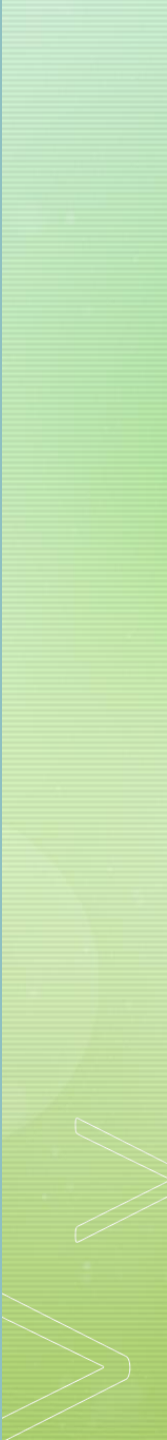
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- What are your thoughts regarding the establishment of a coastal buffer zone?
- What type of development if any would be appropriate in this area?





# Stormwater Management

- Recent Cornell study indicates that precipitation in NJ is likely to increase by 30 to 35% by 2100 assuming moderate emission levels.
  - As precipitation increases due to climate change, today's stormwater management systems may not be able to collect and transport the additional volumes of runoff anticipated for the future.
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# ▀ Stormwater Management

## Discussion

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- **How should stormwater management designs account for increases in precipitation and runoff?**
- **Should systems be designed to function for tomorrow's precipitation in addition to today's?**



# Stormwater Management

## Discussion

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- **NJDEP is considering amending the threshold for major development due to increased precipitation. Thoughts on how this could be accomplished?**
- **NJDEP is considering adopting new standards for redevelopment activities, such as requiring water quality treatment for runoff from reconstructed impervious surface, even if no new impervious surface is proposed. Thoughts?**

# National Flood Insurance Program

- FEMA has recently undertaken an assessment of NJDEP's rules and found areas where compliance with minimum Federal flood reduction standards are not uniformly achieved.
- NJDEP intends to amend the CZM and FHA rules where necessary to ensure that minimum NFIP standards are met.
- NJDEP may also include a statement on its permits clarifying that issuance of a CZM or FHA permit does not guarantee minimum NFIP standards are met.



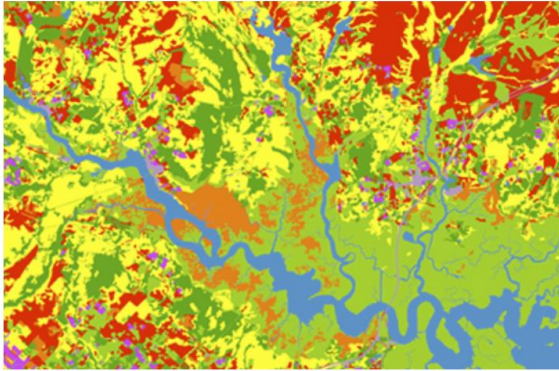
# National Flood Insurance Program

## Discussion

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- Do you have concerns regarding these proposed changes or the overall relationship between State and Federal standards?

# Tools to understand climate change

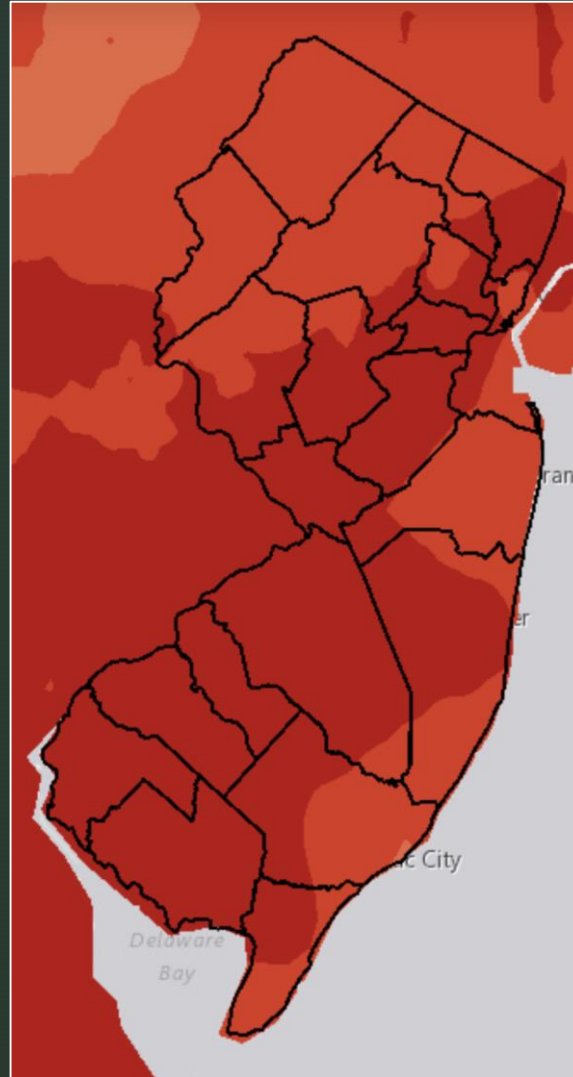


## NJ Forest Adapt

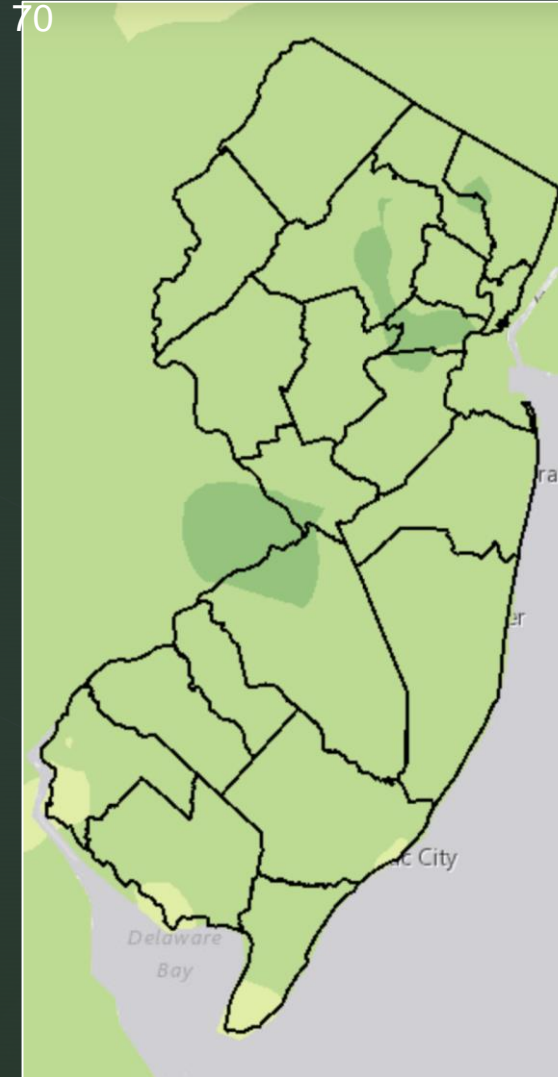
### Forest management tool

This mapping tool enables users to visualize data over multiple timelines and climate change scenarios. Users can explore changes in plant hardiness and heat zones, species distribution, daily minimum and maximum temperatures, heating and cooling degree days, and precipitation. Additional map layers include forest carbon density, canopy cover, impervious surfaces, forest types, pest and disease, wildfire fuel hazard, and more.

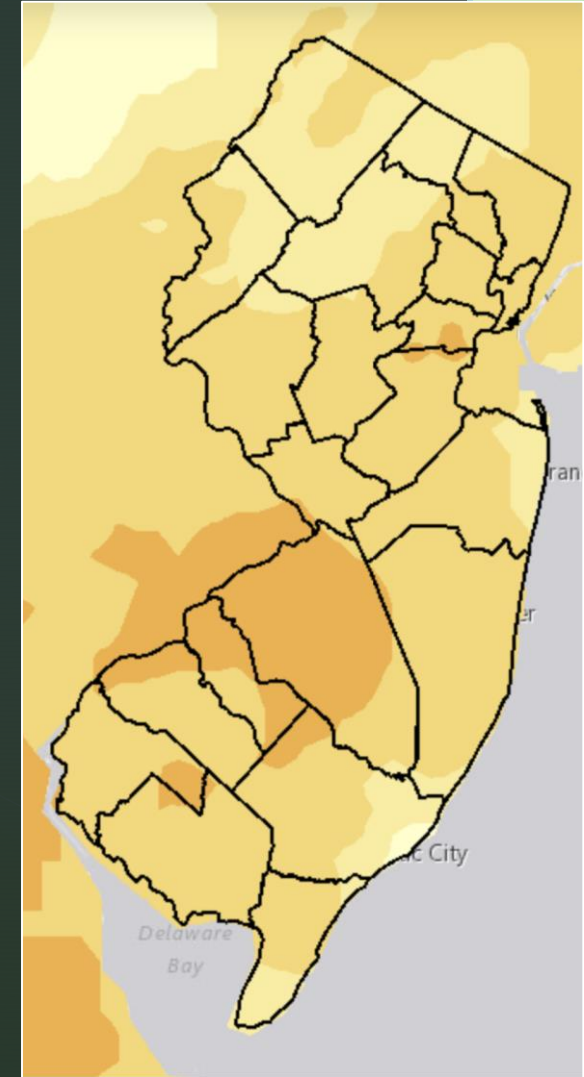
Mean Max Daily Temp, 2050-70



Mean Monthly Precipitation, 2050-70

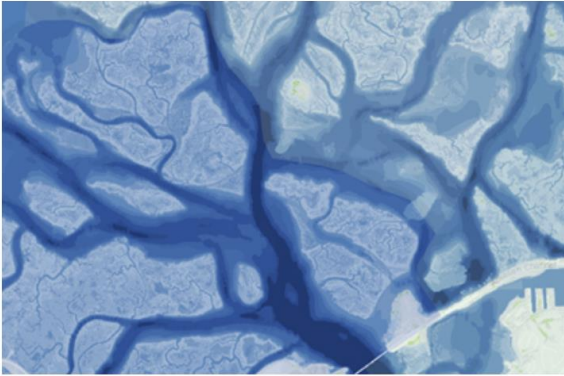


Days Above 95-deg, 2050-70





# Tools to understand climate change

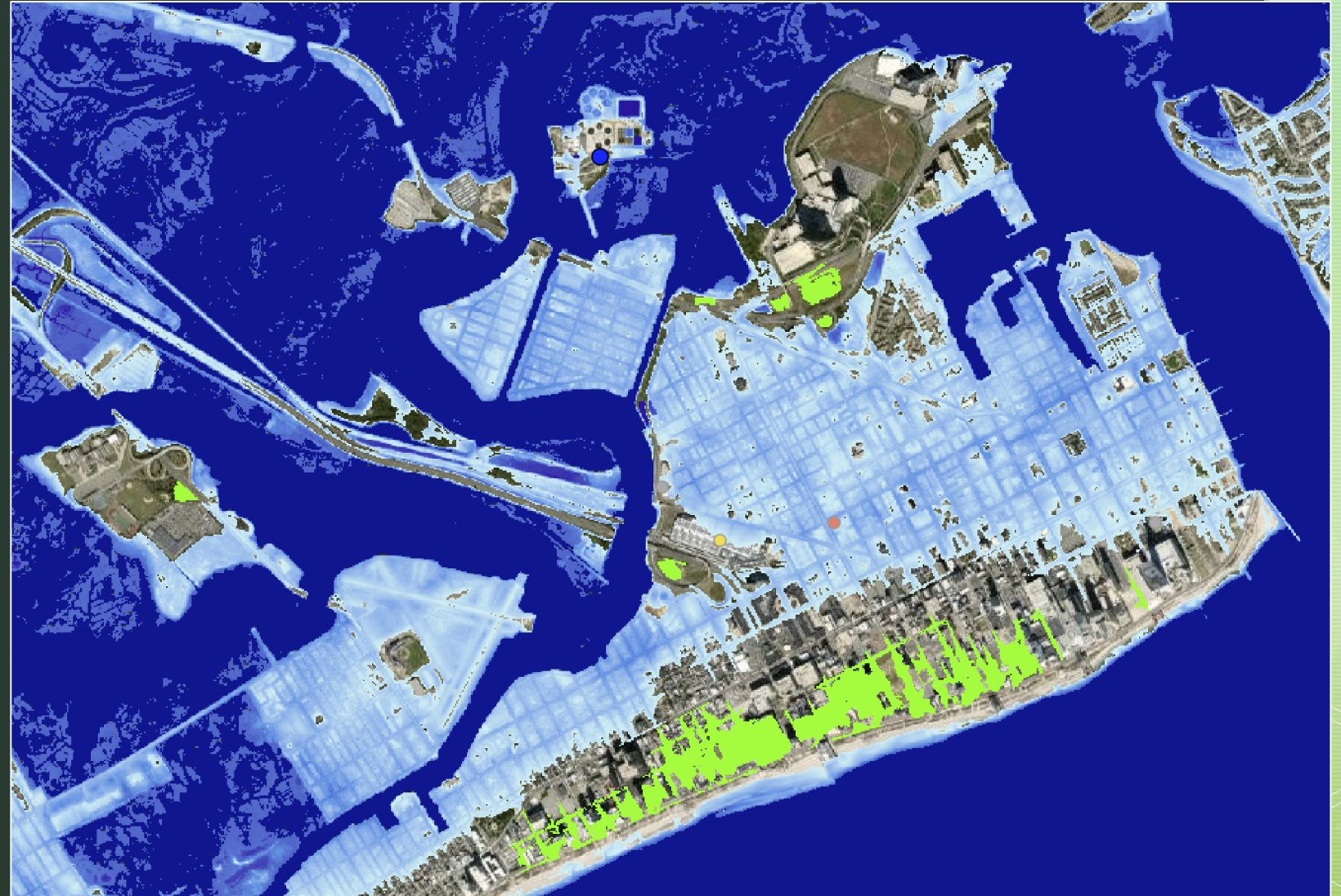


## NJ FloodMapper

### Flood exposure mapping tool

NJ FloodMapper is an interactive mapping tool that allows users to conduct flood exposure analysis based on the best available science for sea-level rise and numerous other parameters, including total water levels, hurricane surge, FEMA flood zones, and Hurricane Sandy surge. Additional map layers depict infrastructure, environmental hazards, marsh and open space, social vulnerability, flood insurance payments for property loss, and land use.

Utilities, Atlantic City, 5-feet SLR





## Tools to understand climate change

### Discussion

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- Are you familiar with these tools?
- If so, have you had success using them?
- If not these, then what tools does your community employ to assess vulnerability of assets?



# THANK YOU

Please contact us to share additional comments or concerns at:

[jill.aspinwall@dep.nj.gov](mailto:jill.aspinwall@dep.nj.gov)

You may also submit comments to the NJPACT webpage through the survey tab at:

<https://www.surveymonkey.com/r/b8fqgdw>

