# UTILITIES AND CLIMATE CHANGE

NJ PACT STAKEHOLDER SESSION

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

23 SEPTEMBER 2020

# NJ PACT: OVERVIEW

Executive Order 89

Executive Order 100

Administrative Order 2020-01

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

# OBJECTIVE

DEVELOPING A REGULATORY FRAMEWORK THAT HELPS TO ENSURE THAT THE STATE'S UTILITY INFRASTRUCTURE IS PROTECTED AGAINST CLIMATE THREATS BOTH TODAY AND TOMORROW

# 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 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

# FUTURE 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 AND FLOOD IMPACTS

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 |

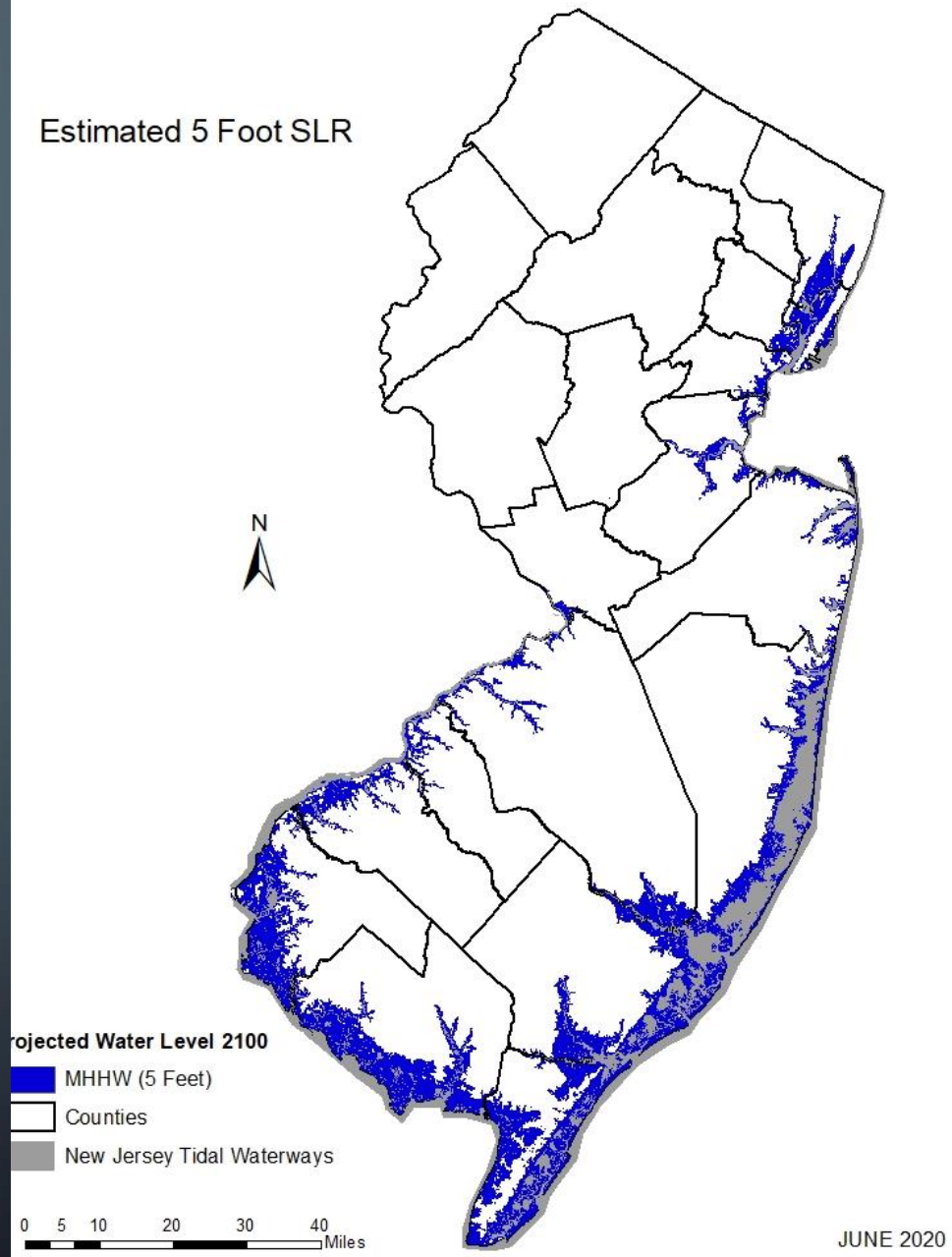
**2010 (2001-2019 average) Observed = 0.2 ft*

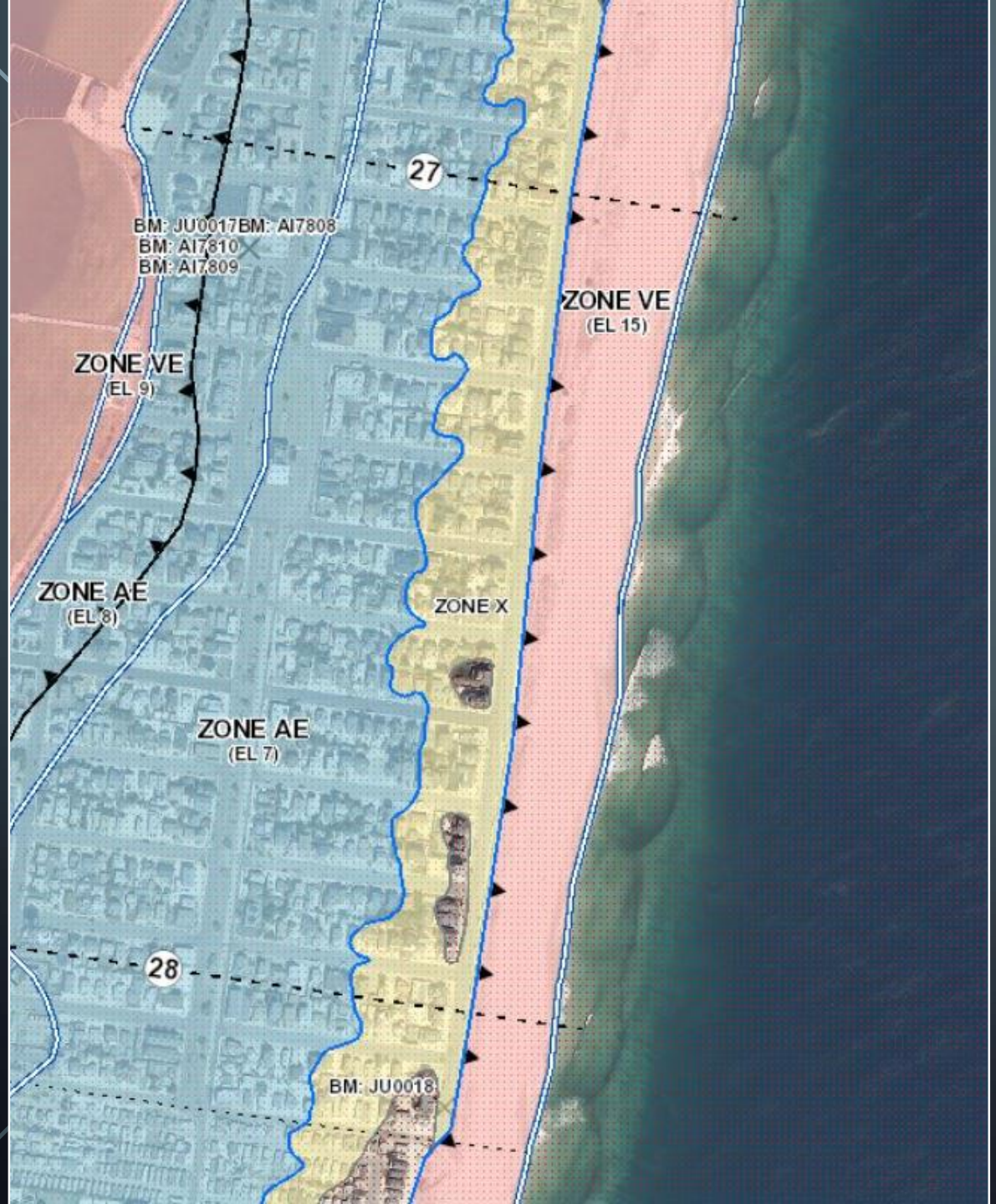
# INUNDATION AND FLOOD IMPACTS

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 HIGHER HIGH WATER (MHHW).
- DEVELOPMENT WITHIN THE IRZ WILL HAVE MORE PROTECTIVE STANDARDS THAN THE REMAINDER OF THE FLOODPLAIN BEYOND IT.

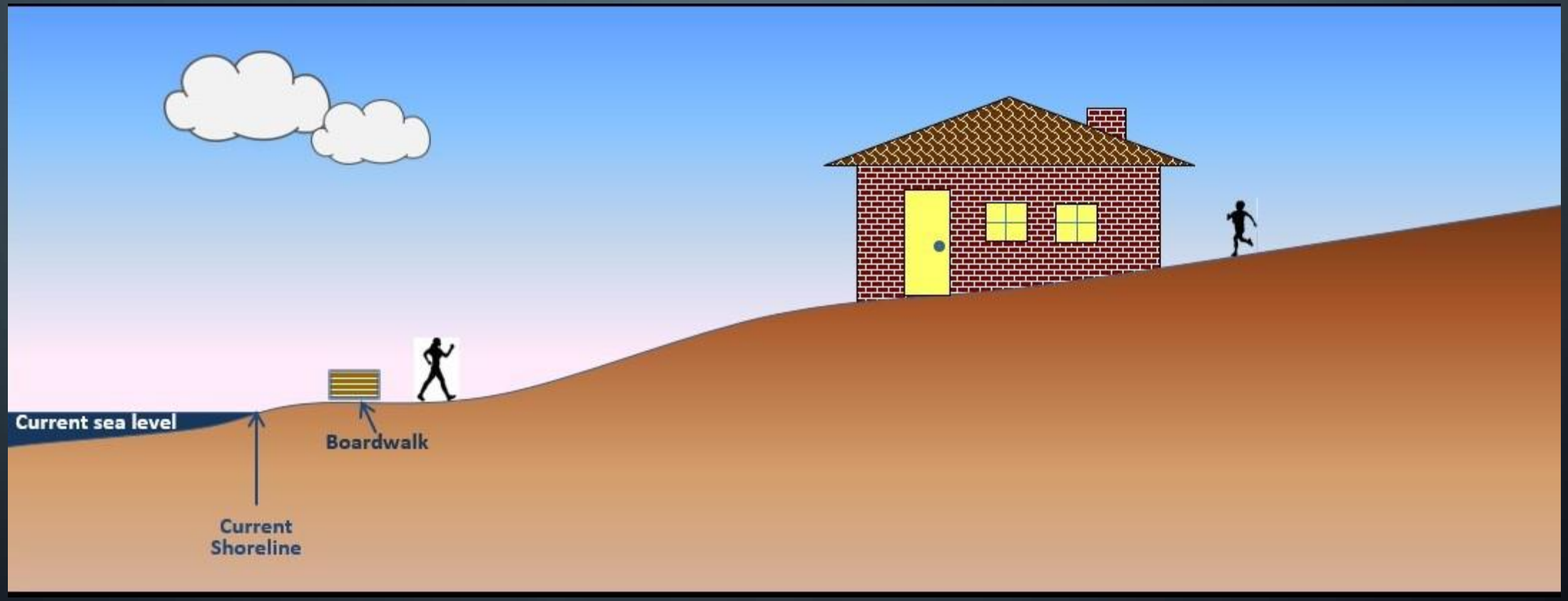


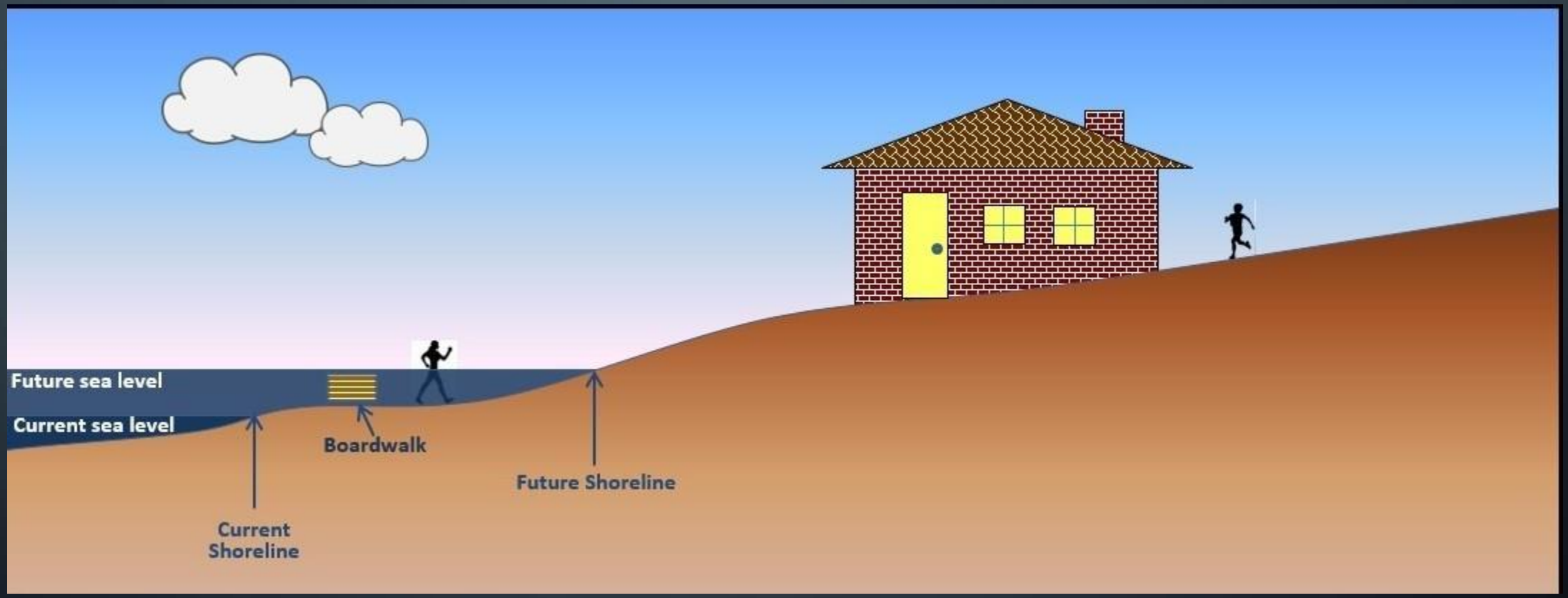


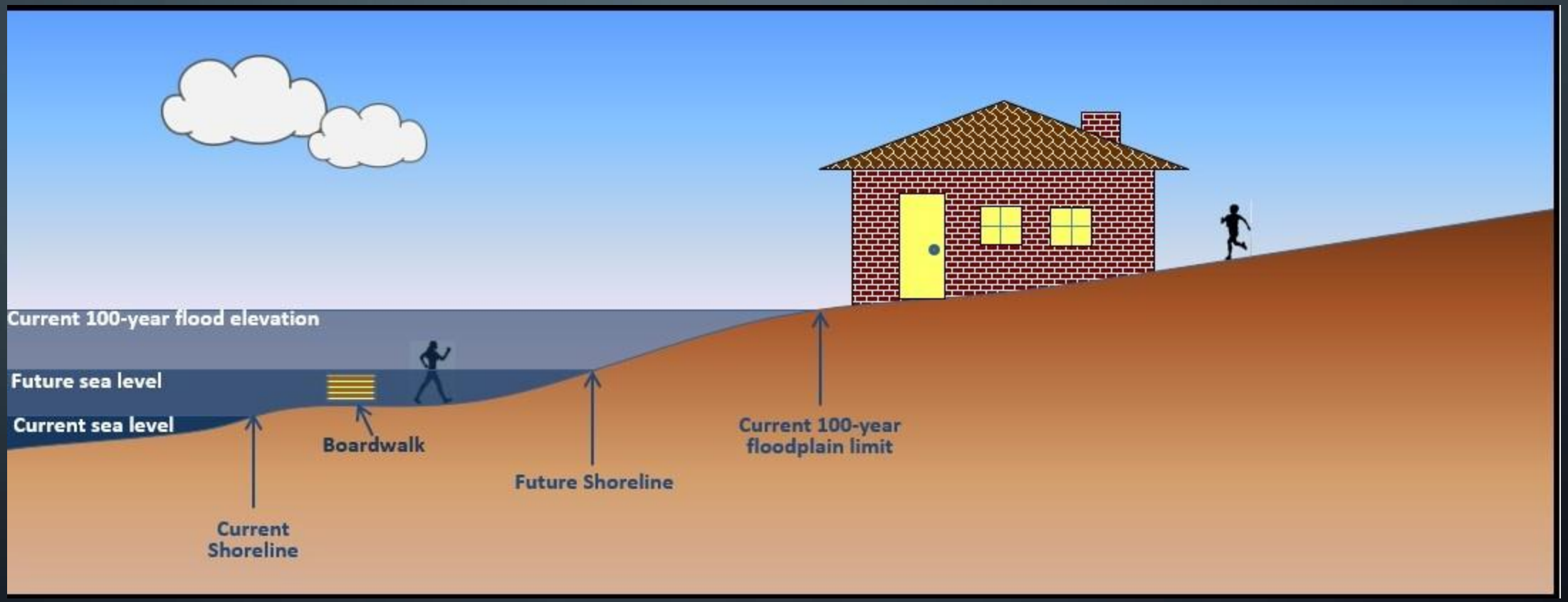

# TIDAL FLOOD HAZARD AREAS

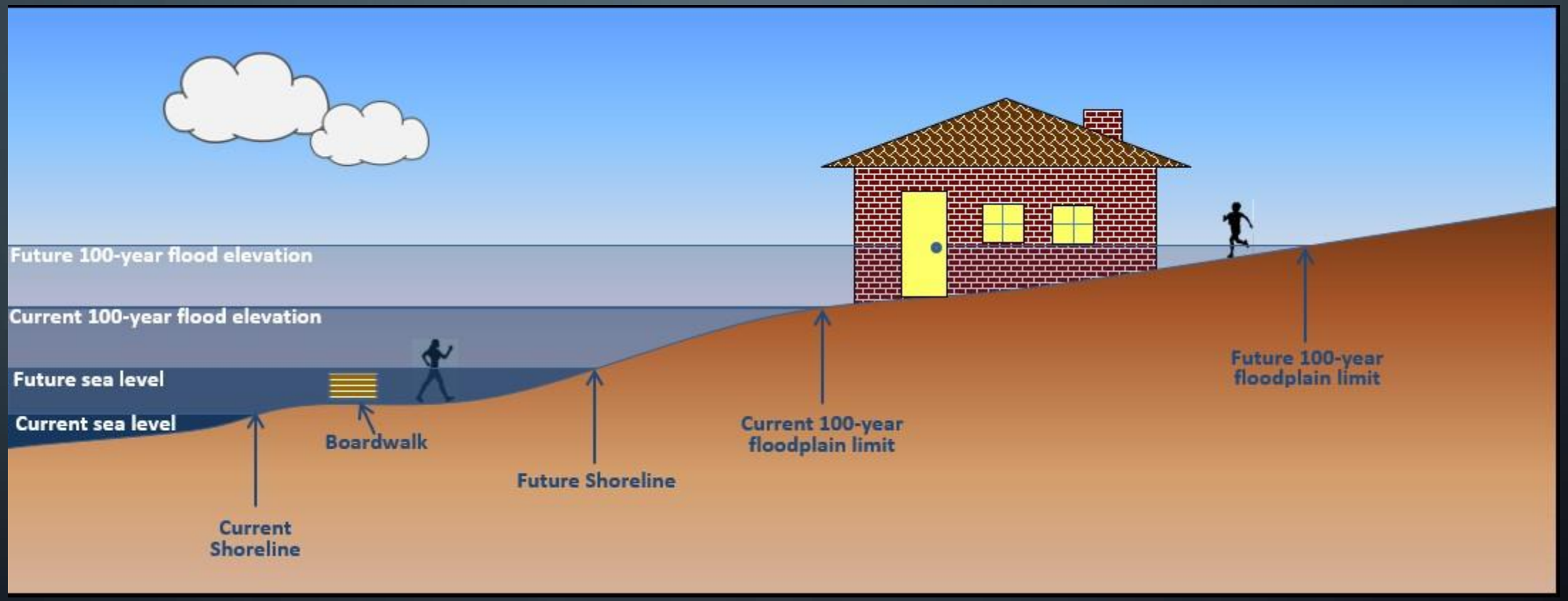
- EXISTING TIDAL FLOODPLAIN IS BASED ON THE HIGHER OF FEMA'S EFFECTIVE OR PRELIMINARY 100-YEAR FLOOD ELEVATION WITH NO FREEBOARD OR FACTOR OF SAFETY.

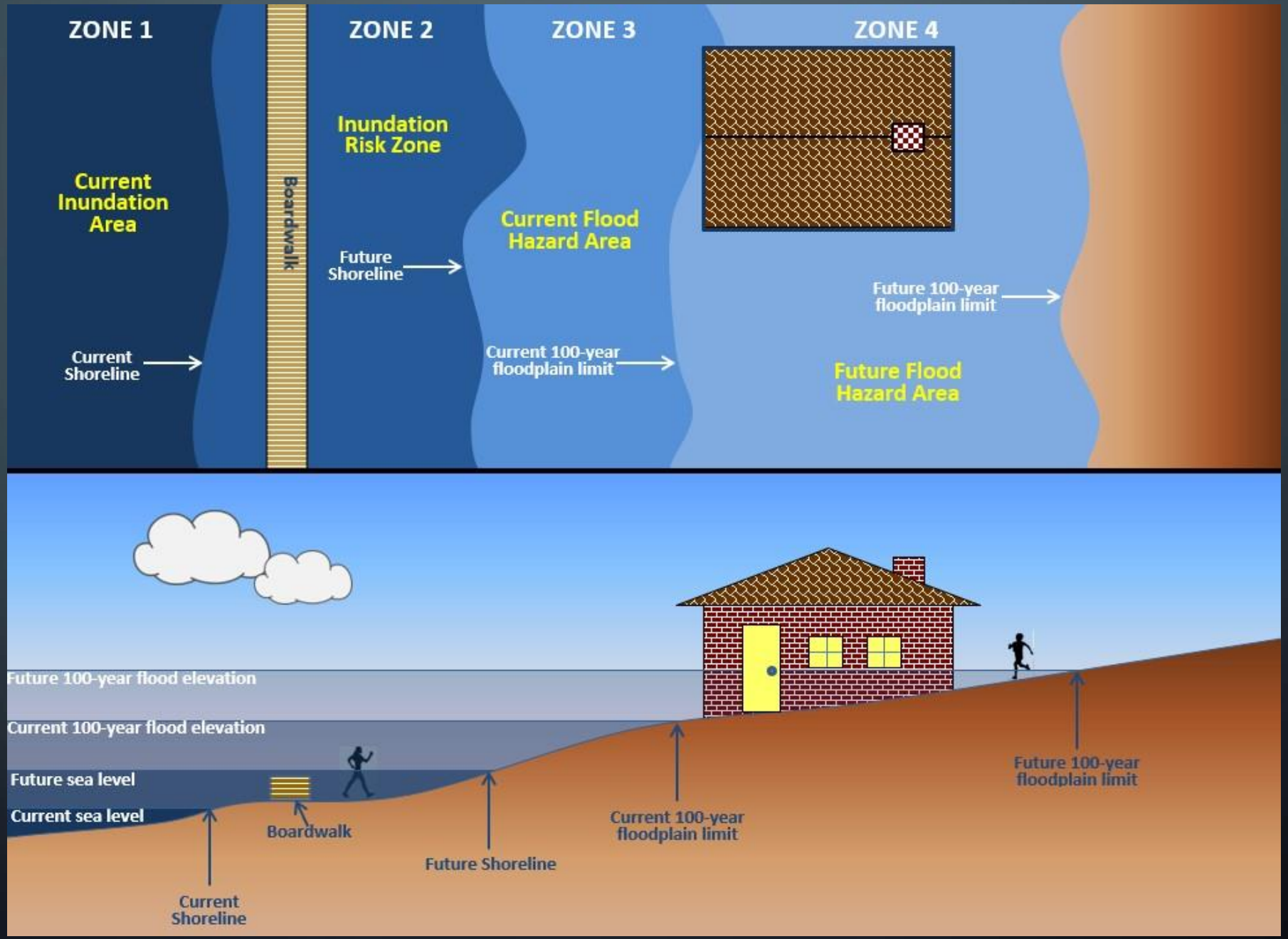
- PROPOSAL WOULD ADD A 5-FOOT FACTOR OF SAFETY TO EXISTING TIDAL FLOOD ELEVATIONS


Current sea level
Boardwalk
Current
Shoreline


Future sea level
Current sea level
Boardwalk
Future Shoreline
Current
Shoreline

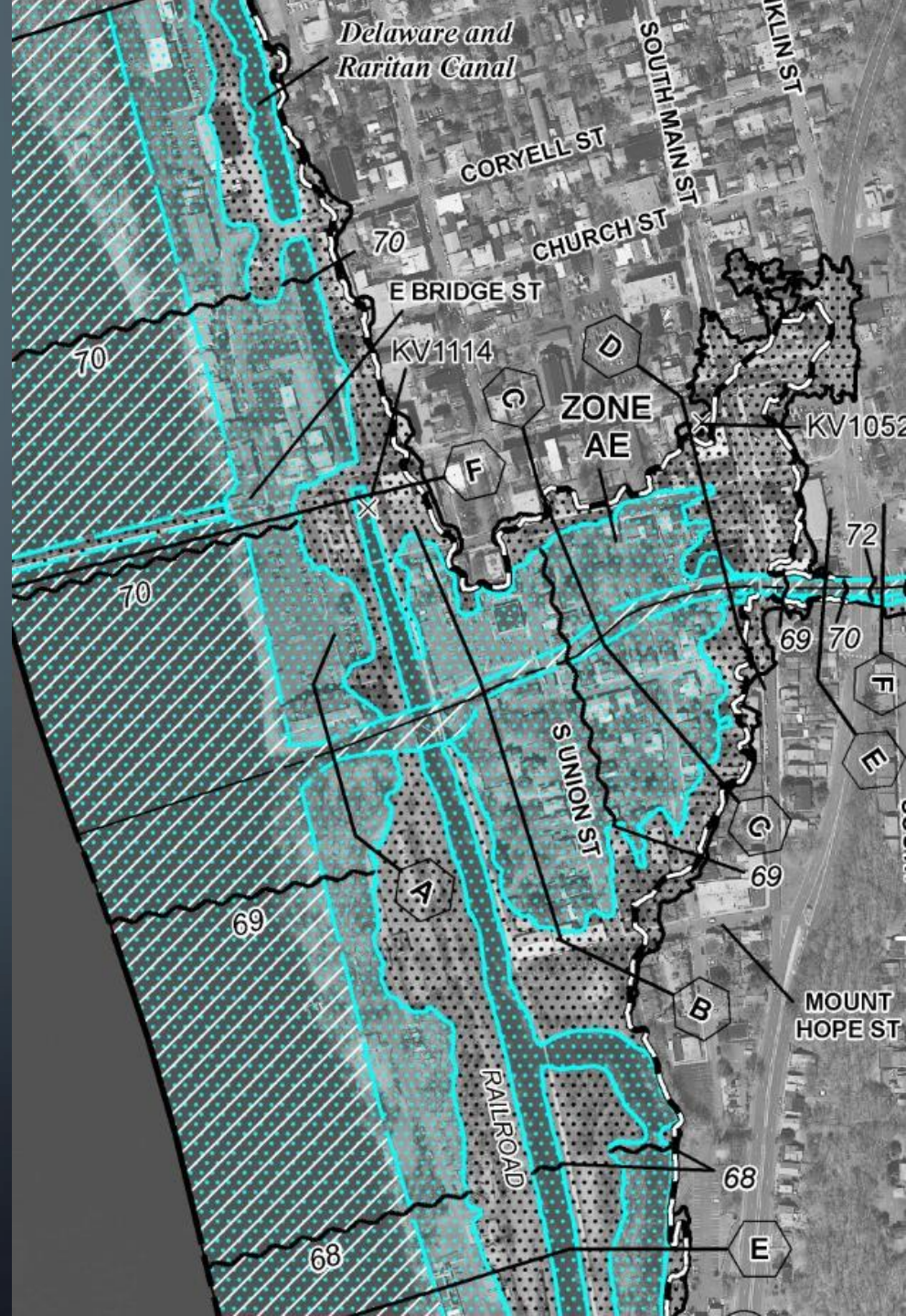

Current 100-year flood elevation
Future sea level
Current sea level
Boardwalk
Current 100-year floodplain limit
Future Shoreline
Current Shoreline


Future 100-year flood elevation
Current 100-year flood elevation
Future sea level
Current sea level
Boardwalk
Current Shoreline
Future Shoreline
Current 100-year floodplain limit
Future 100-year floodplain limit


ZONE 1
ZONE 2
ZONE 3
ZONE 4
Boardwalk
Current Inundation Area
Inundation Risk Zone
Current Flood Hazard Area
Future Shoreline
Future 100-year floodplain limit
Current Shoreline
Current 100-year floodplain limit
Future Flood Hazard Area
Future 100-year flood elevation
Current 100-year flood elevation
Future sea level
Current sea level
Boardwalk
Future Shoreline
Current 100-year floodplain limit
Future 100-year floodplain limit
Current Shoreline

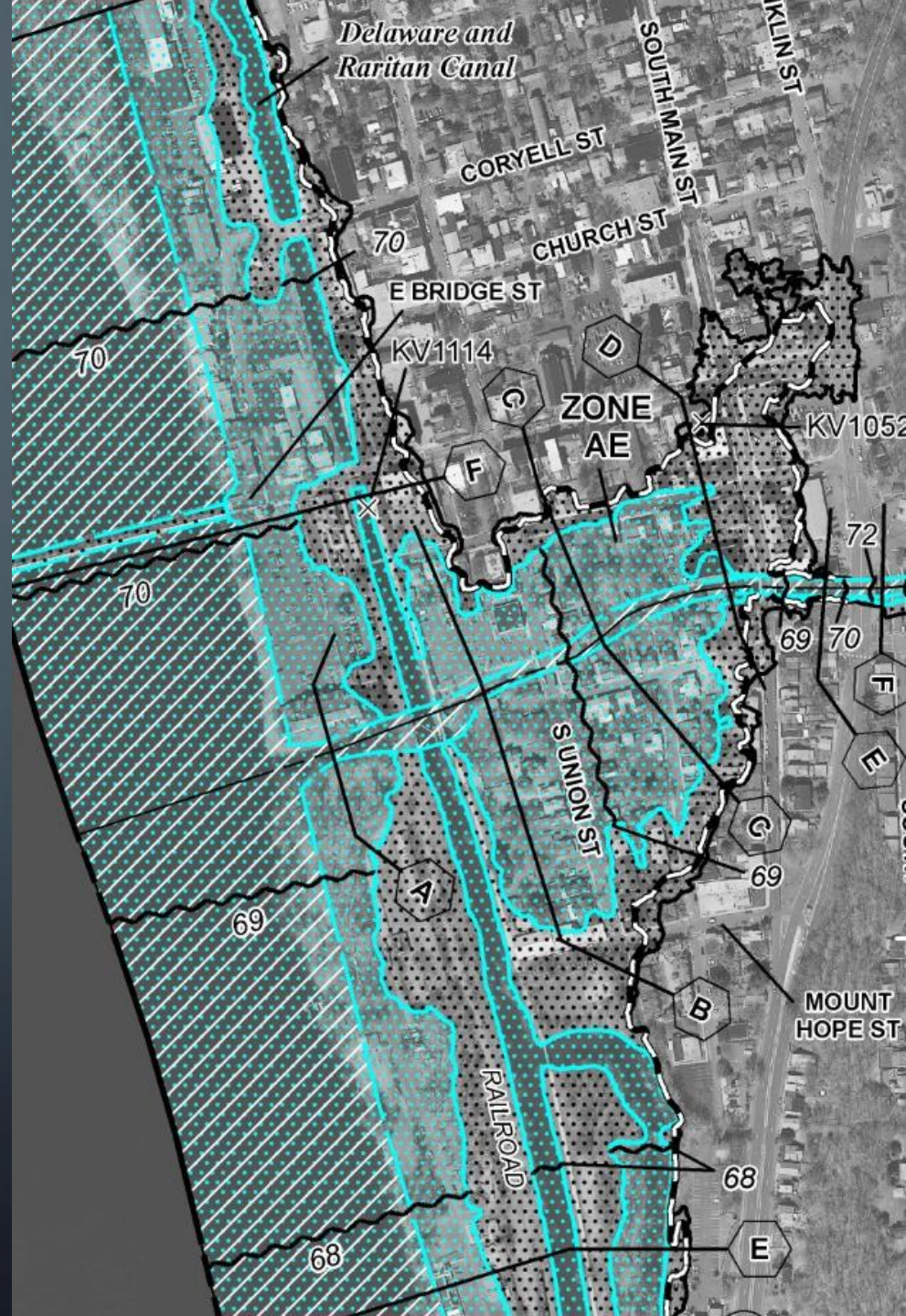
# FLUVIAL FLOOD HAZARD AREAS

- 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).
- A RECENT NEW YORK STUDY CONCLUDES THAT PRECIPITATION INTENSITIES IN NORTHERN NEW JERSEY ARE LIKELY TO INCREASE BETWEEN 30% AND 35% BY 2100.



# FLUVIAL FLOOD HAZARD AREAS

- 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 TO DESCRIBE THE FUTURE FLOOD HAZARD AREA.
- ALONG WATERS FOR WHICH FEMA MAPPING IS NOT AVAILABLE, OR WHERE A PARTY DISPUTES THE ACCURACY OF FEMA MAPPING, THE FUTURE 100-YEAR RAINFALL PLUS 25% WOULD BE USED TO CALCULATE THE FUTURE REGULATORY FLOOD HAZARD LIMIT.



# PROTECTING CRITICAL FACILITIES AND INFRASTRUCTURE

- 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.

# DISCUSSION

## Question 1

What tools do you currently use

to assess the vulnerability of your investments?

# DISCUSSION

## Question 2

What challenges do you face when making necessary resiliency improvements?

# DISCUSSION

## Question 3

What steps have you taken to increase resiliency of your infrastructure considering the threats of climate change?

# DISCUSSION

## Question 4

When expanding existing operations or siting new facilities, how do you assess the potential vulnerability of the site to climate threats?

# DISCUSSION

## Question 5

Are there any regulatory hurdles that hinder your ability to make resiliency improvements?

# DISCUSSION

## Question 6

If regulatory hurdles exist, are there specific regulatory changes that NJDEP can make to facilitate resiliency improvements?

# OPEN FORUM

## DISCUSSION OF NEW TOPICS AND IDEAS

# THANK YOU

**PLEASE CONTACT US TO SHARE**

**ADDITIONAL COMMENTS OR CONCERNS AT:**

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