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What's Next?

Policy, Politics, and Socioeconomics

Consider **everything** as a
communication tool.



- 
- Flood maps
 - Schematics and diagrams
 - Internal presentations (Sunshine)

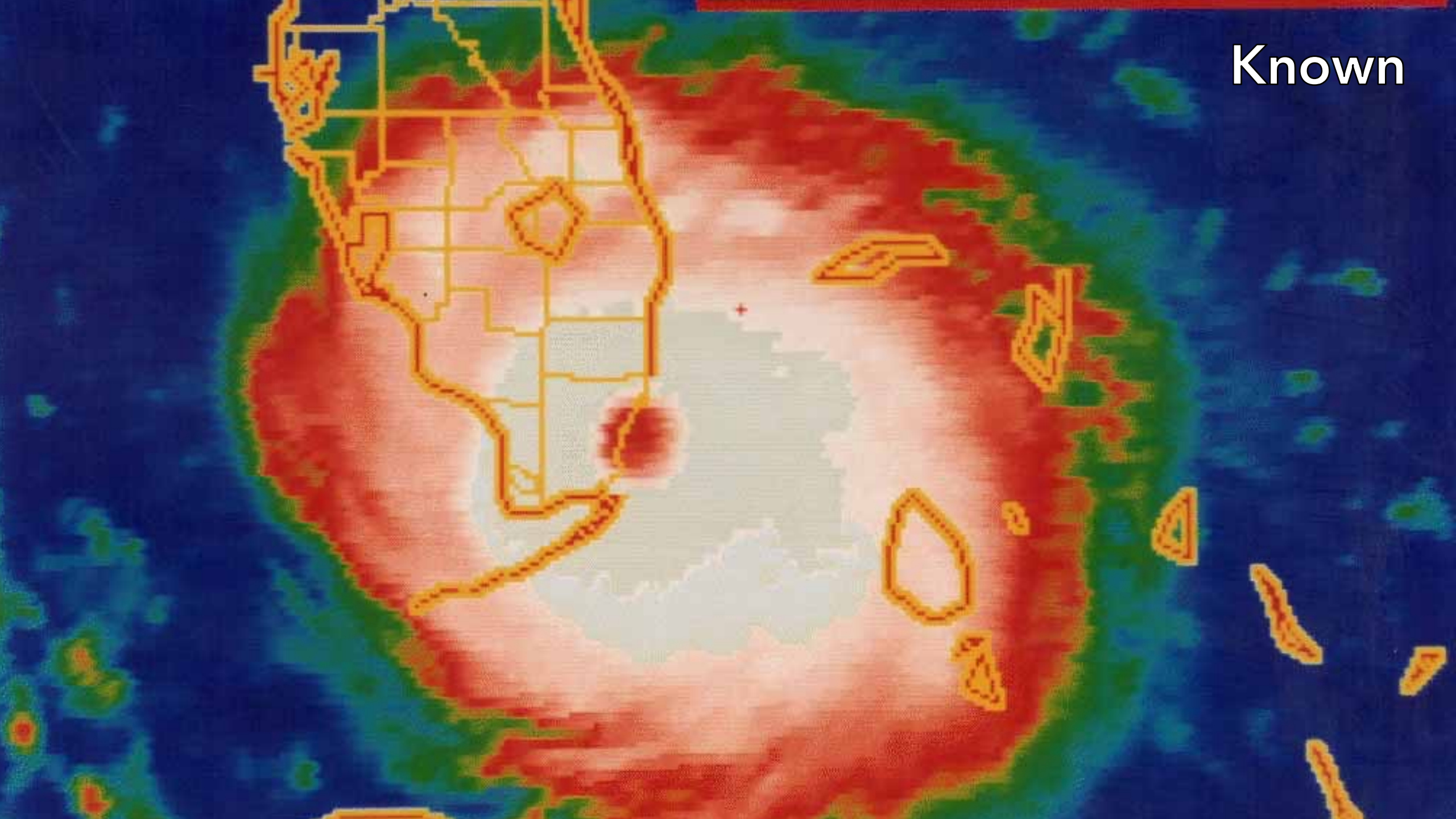
What's Next?

- Known
- Known Unknown
- Unknown Unknown

Flooding is a huge challenge for Florida. Stormwater systems are a primary flood defense for most communities and how they think about flooding.



Known



Climate risk and response

Physical hazards and socioeconomic impacts

ENVIRONMENT JANUARY 14, 2020 / 7:07 AM / 6 DAYS AGO

U.S. flood risk model to be publicly available in boon for homebuyers

Kate Duguid

4 MIN READ

NEW YORK (Reuters) - A climate research organization will offer access to a risk model that predicts the probability of flooding for homes across the United States, giving the public a look at the data institutional investors use to gauge risk.



We're not even close to prepared for the rising

Sea Level Rise Will Flood of Cities in the Near Future



CAN MIAMI BEACH SURVIVE GLOBAL WARMING?

Miami real estate is booming as never before—but rising sea levels driven by global warming might mean a major bust. The mayor, climate scientists, and other experts tackle the dilemma.

could lose 15% of its value by 2030 due to sea rise

And it could lose up to 35 percent of its value by 2050, according to a new report.

...premise Court ruled that Amendment 4's terms of sentence included the payment obligations imposed at sentencing. It is a felony voting rights.

In a narrow opinion requested by Gov. Ron DeSantis, justices gave their answer on one of the questions at the heart of the historic ballot measure that voters passed in 2010. Celebrated as one of the greatest expansions of voting rights in decades, it removed the right to vote to most non-voter felons who completed "all terms of sentence."

But within months, the Florida Gov. Ron DeSantis requested the opinion.

phrase "all terms of sentence" became a flash point in the GOP-controlled Legislature.

Lawmakers lined up behind Senate Bill 7066, which defined "all terms" to include all financial obligations. That definition drew criticism that it created a modern-day poll tax.

SEE VOTING, 2A

...intelligence. It will make insurance premiums rise, mortgages more expensive, and homes worth less.

BY ALEX HARRIS alexharris@mcg.com

Increasing sea rise is going to water down the value of some of the most covered and expensive real estate in Florida, and insurance rates will go up, too.

That's the conclusion of a pair of new reports calculating just how much of an impact climate change will have on Florida's real estate industry.

A report from international consulting giant McKinsey released Thursday found that Florida homes subject to the risk of flooding could lose 5-15% of their value in the next decade, barring any significant changes to the market in that time. By 2050, that could leap to 15-35%.

In a Miami-Dade-focused report from Jupiter Intelligence, researchers found that moderate flooding of about a foot will affect nearly double the number of homes by 2050.

The reports tackle a relatively new topic in the financial world, one with big implications for the most vulnerable state in the nation. It explains all the ways that the warming world will mix with global financial systems.

In McKinsey's report, Florida was the case study for the climate's impacts on the real estate market.

"The question that we ask is if you look at this ecosystem that exists around real estate now, what happens if you throw in a changing climate? It starts to expose all these vulnerabilities inherent in the system," said Mekala Krishnan, a senior fellow at the McKinsey Global Institute and co-author of the

Newsweek

HOW LONG BEFORE ALL OF FLORIDA IS UNDERWATER?

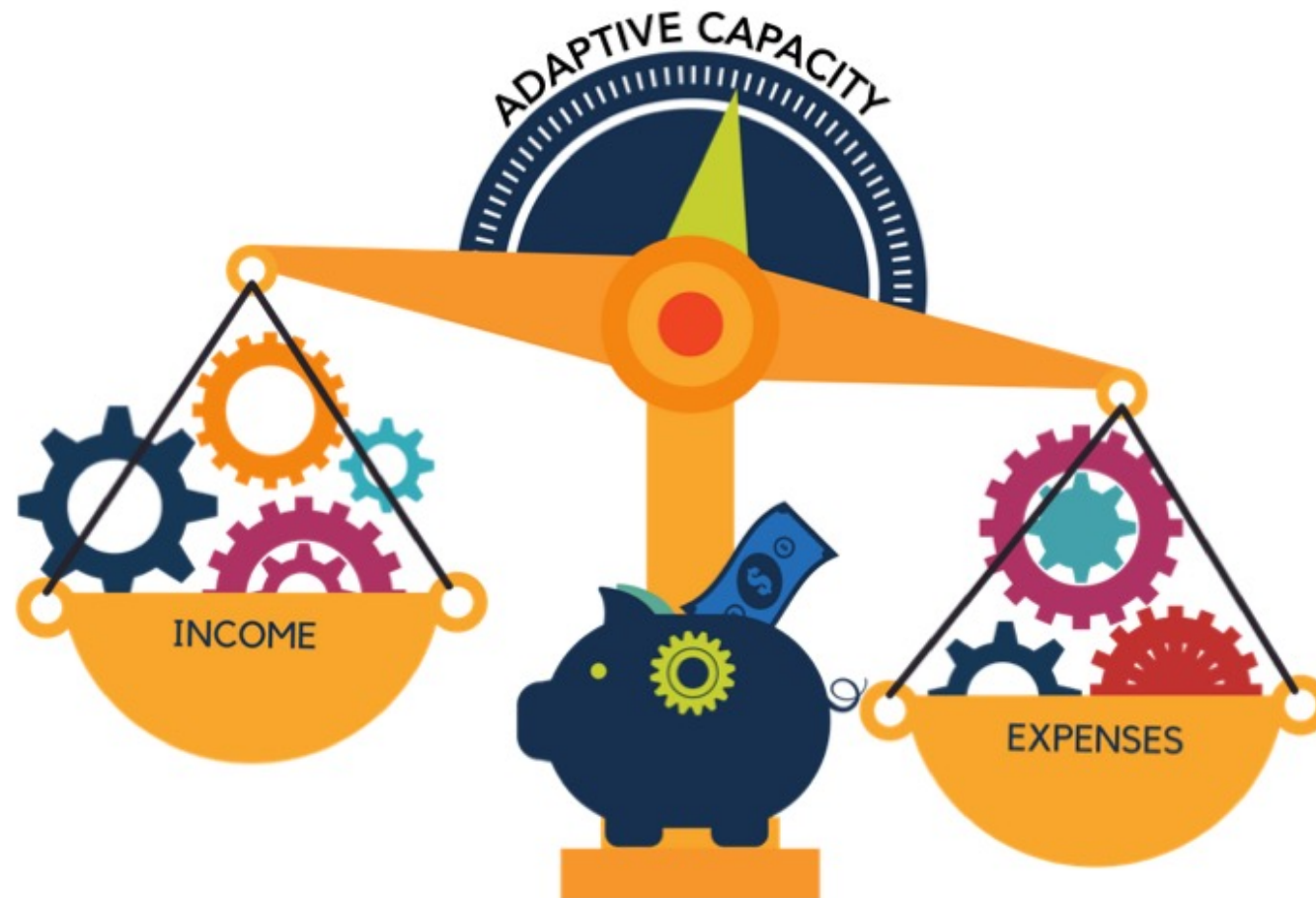
Unknown Unknown



Let's focus on **economics**
for a few moments.

The **Catch-22** of Flooding & Sea Level Rise

Those communities that will require the most investment to adapt will also be hit the hardest financially by sea level rise.



ADAPTATION JOURNEY

FLOODING (W/O DAMAGE)



FLOODING (W/ DAMAGE)



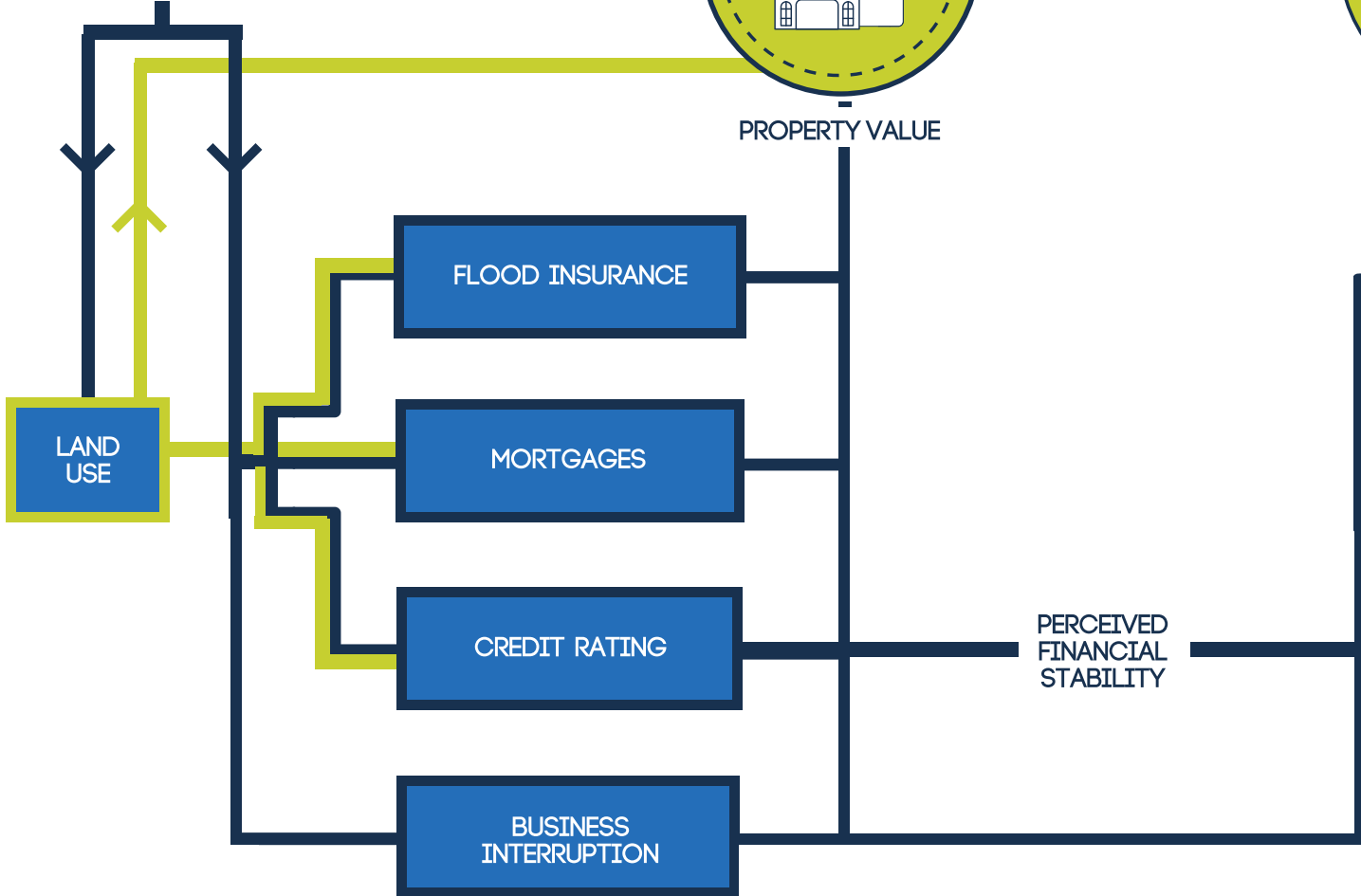
PROPERTY VALUE



TAX REVENUE



ADAPTATIVE CAPACITY



Municipal Bonds

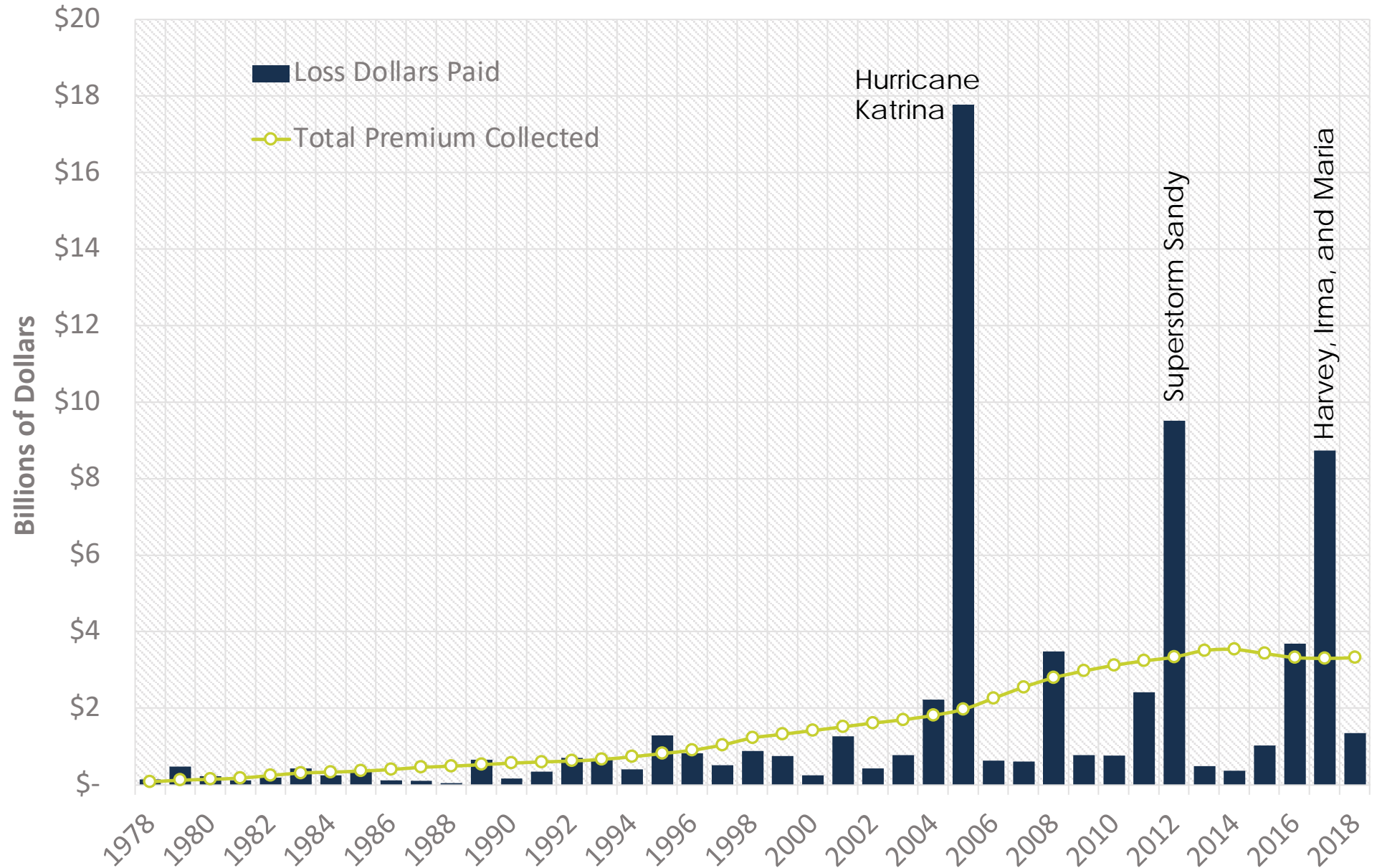
- Adaptation today (bonding projects today) will make it easier to bond projects in the future.
- Communities that wait to adapt may find it harder to bond public infrastructure projects.



Flood Insurance

The National Flood Insurance Program (NFIP) is run by Federal Emergency Management Agency (FEMA) and consistently pays out more than it brings in.

We are subsidizing bad behavior.



The Business Case for Resilience in Southeast Florida

Temporary Storm Damages

Permanent Damages from Rising Sea Levels



Direct Property Impacts

- Structure and content damages
- Relocation costs

Direct Property Impacts

- Property value loss



Business and Employment Impacts

- Sales output loss
- Income loss
- Job impacts

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- Sales output loss
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- Job impacts



Fiscal Impacts

- Sales tax loss
- Tourist development tax loss

Fiscal Impacts

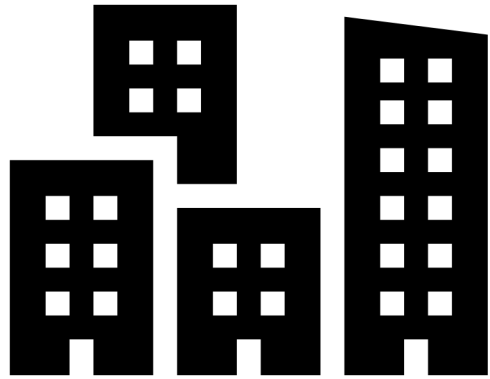
- Property tax loss
- Sales tax loss
- Tourist development tax loss

Engineering analysis drives
decision-making.



Which community should we **adapt**?

Both solutions offer same level of protection.



Community A

- Cost: \$2M
- Benefit: \$4M



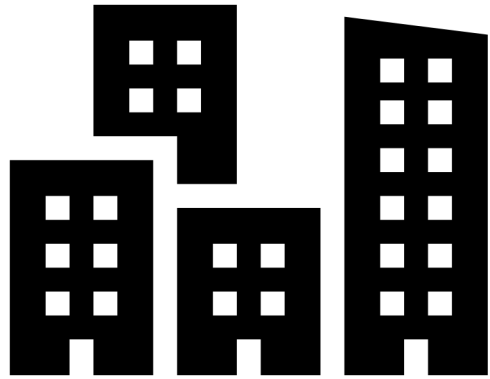
Community B

- Cost: \$2M
- Benefit: \$2M

This is an **economic**
and **socioeconomic** problem.

Which community should we **adapt**?

Both solutions offer same level of protection.



Community A

- Cost: \$2M
- Benefit: \$4M
- Protects 500 people
- Very Affluent



Community B

- Cost: \$2M
- Benefit: \$2M
- Protects 10,000 people
- Socioeconomically Disadvantaged

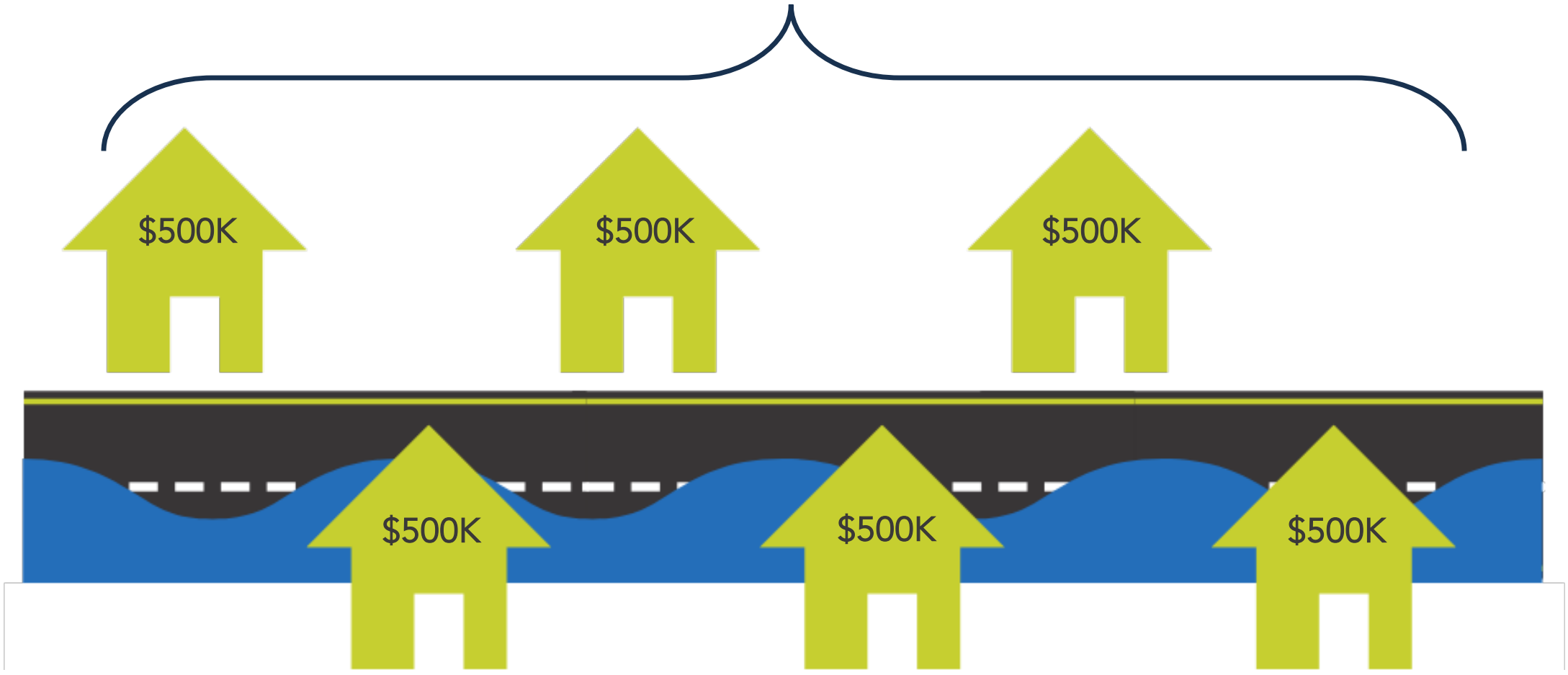
Considering Socioeconomics

- Cost-benefit biases our decision-making towards affluent areas.
- We must consider at-risk populations and those who do not have the resources to adapt themselves.
- Often in communities, the more affluent are at-risk along the coast and feel that they pay their fair share.

**This requires careful, consistent messaging –
and educating stakeholders on economics.**

Raise the road or **abandon** it?

Buyout: \$3M; Raising the Road: \$5M
(enough to protect road until 2040)

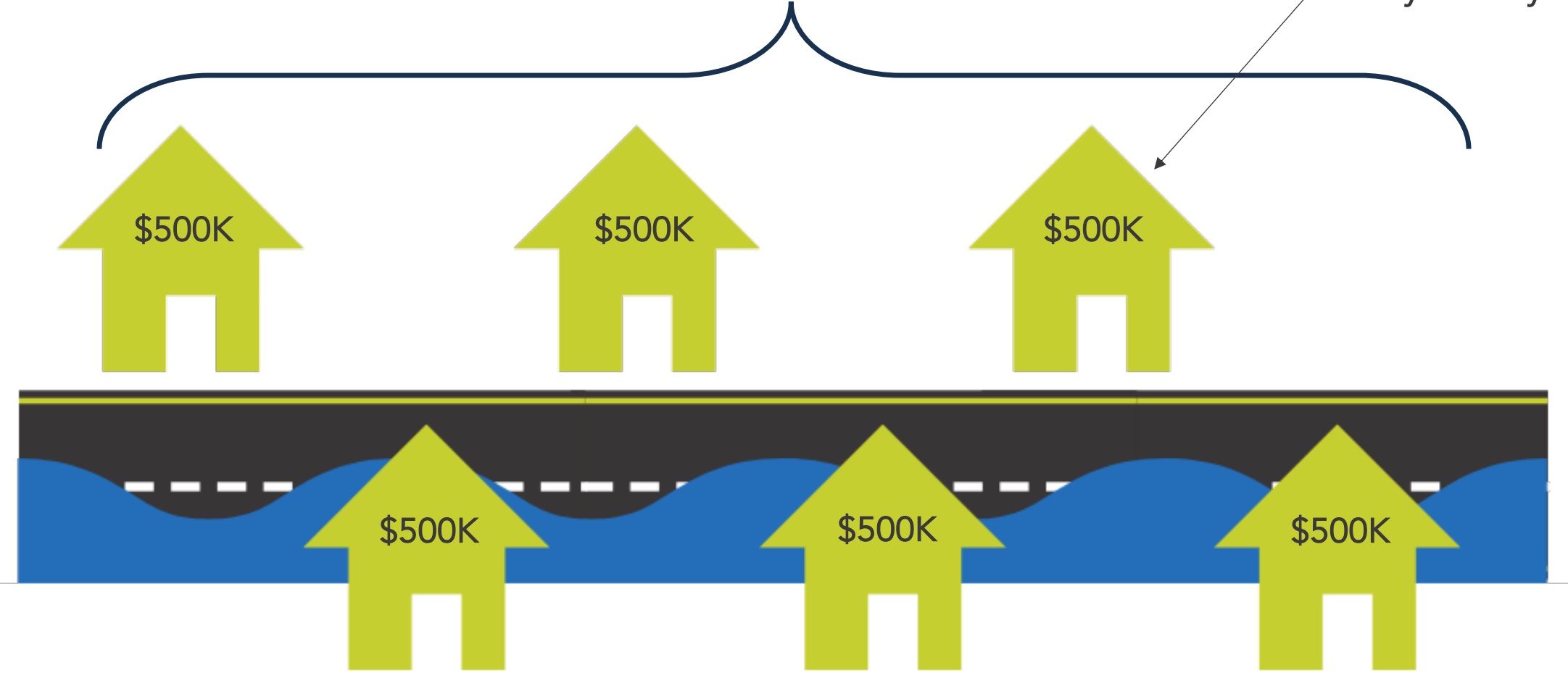


This is an **economic**
and **political** problem.

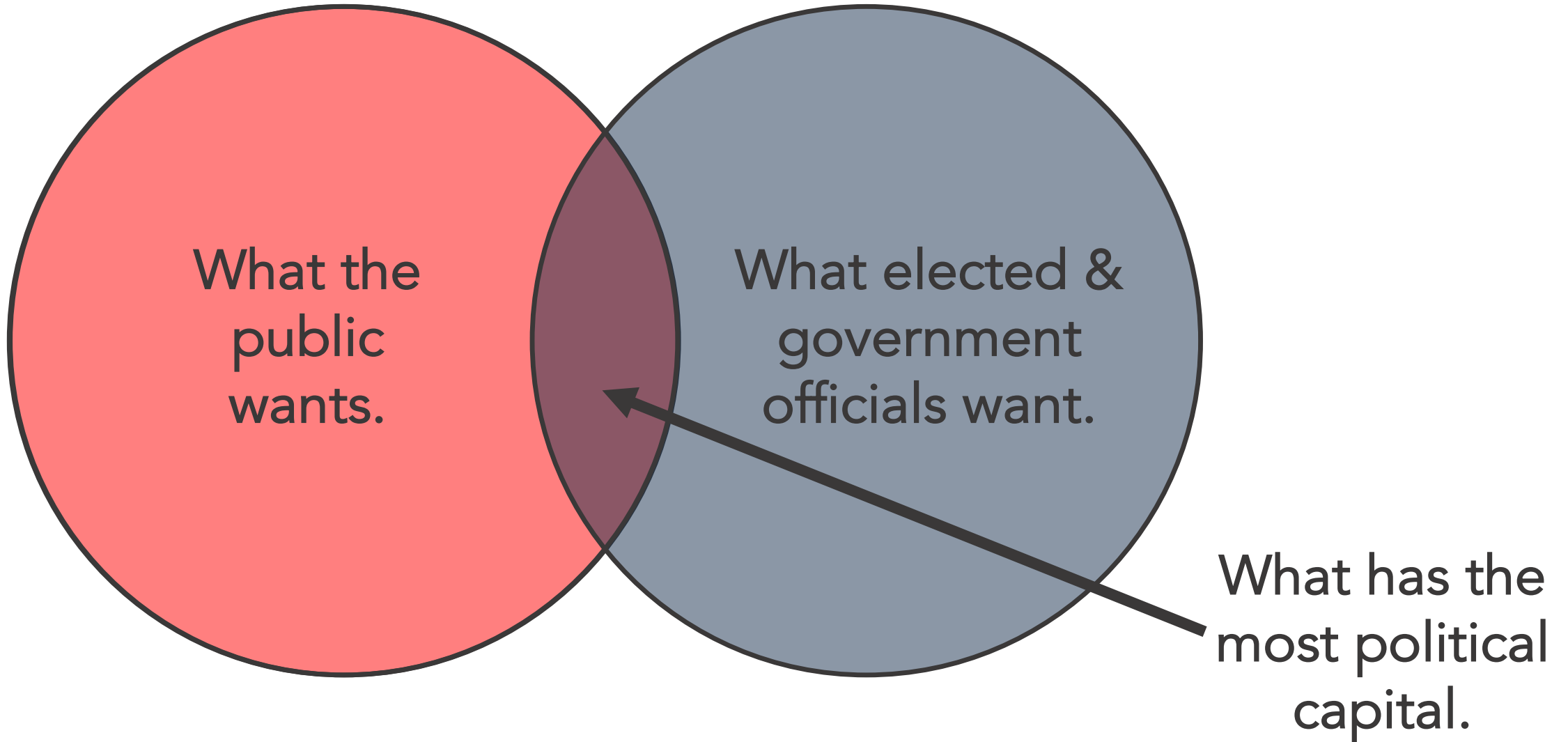
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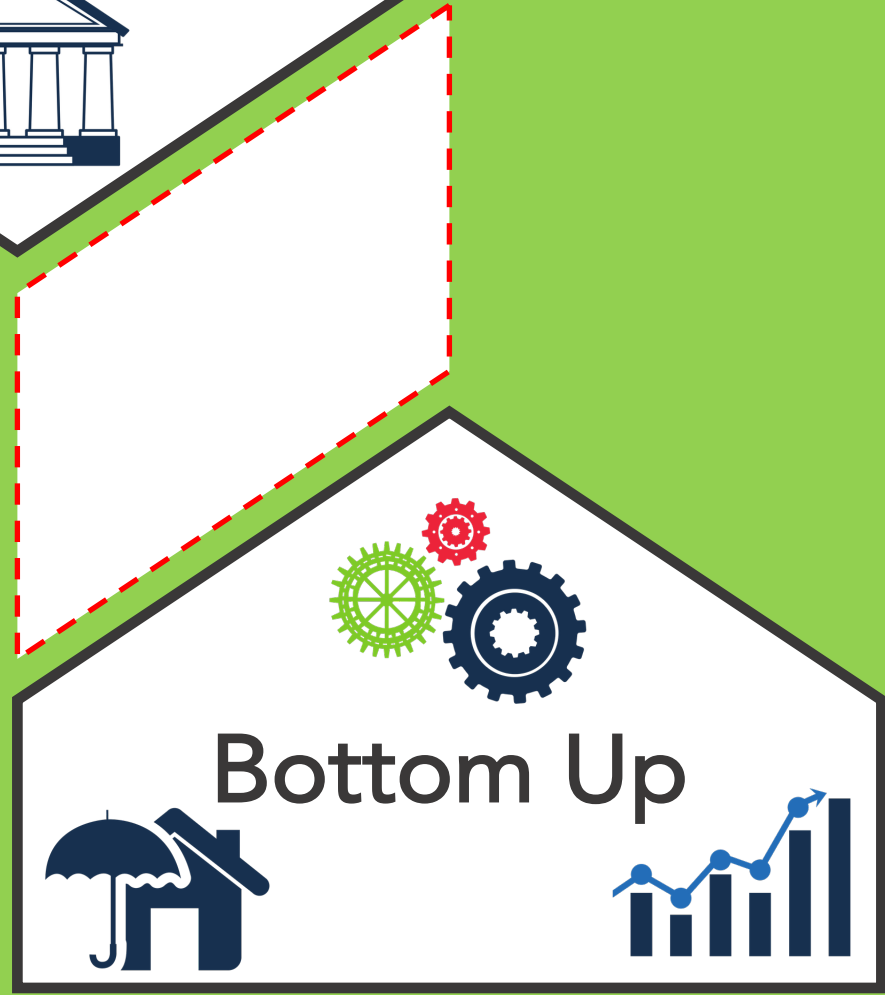
Mayor's best friend, political supporter, and employer of 20% of your City.



Bridging the Gap



Responsibility Gap of Resilience

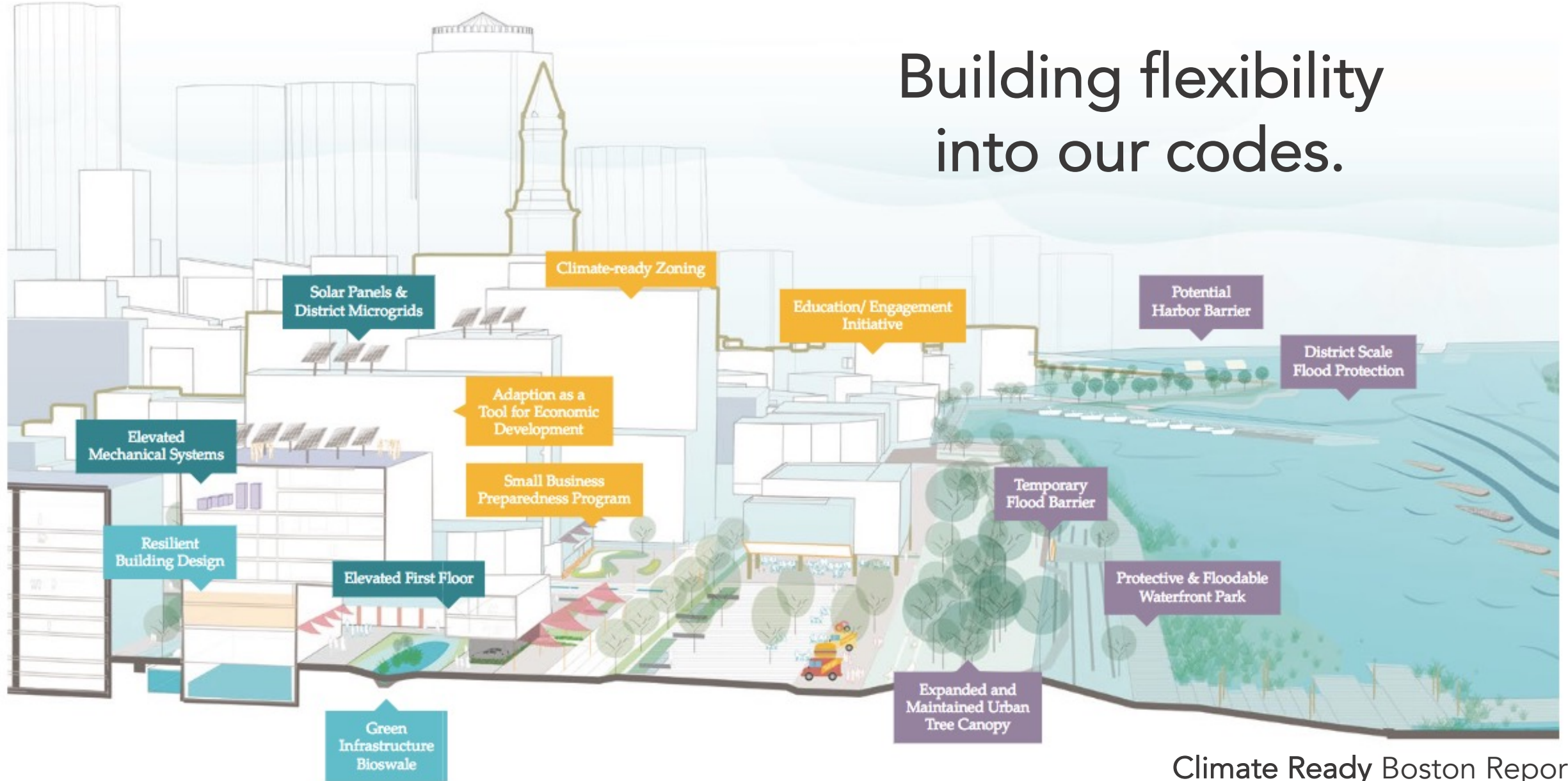


Policy must be part of the engineering solution.

- These challenges require incremental changes over time.
- These challenges require the private residents and businesses to adapt alongside public infrastructure.
- These challenge require sustained investment over time.

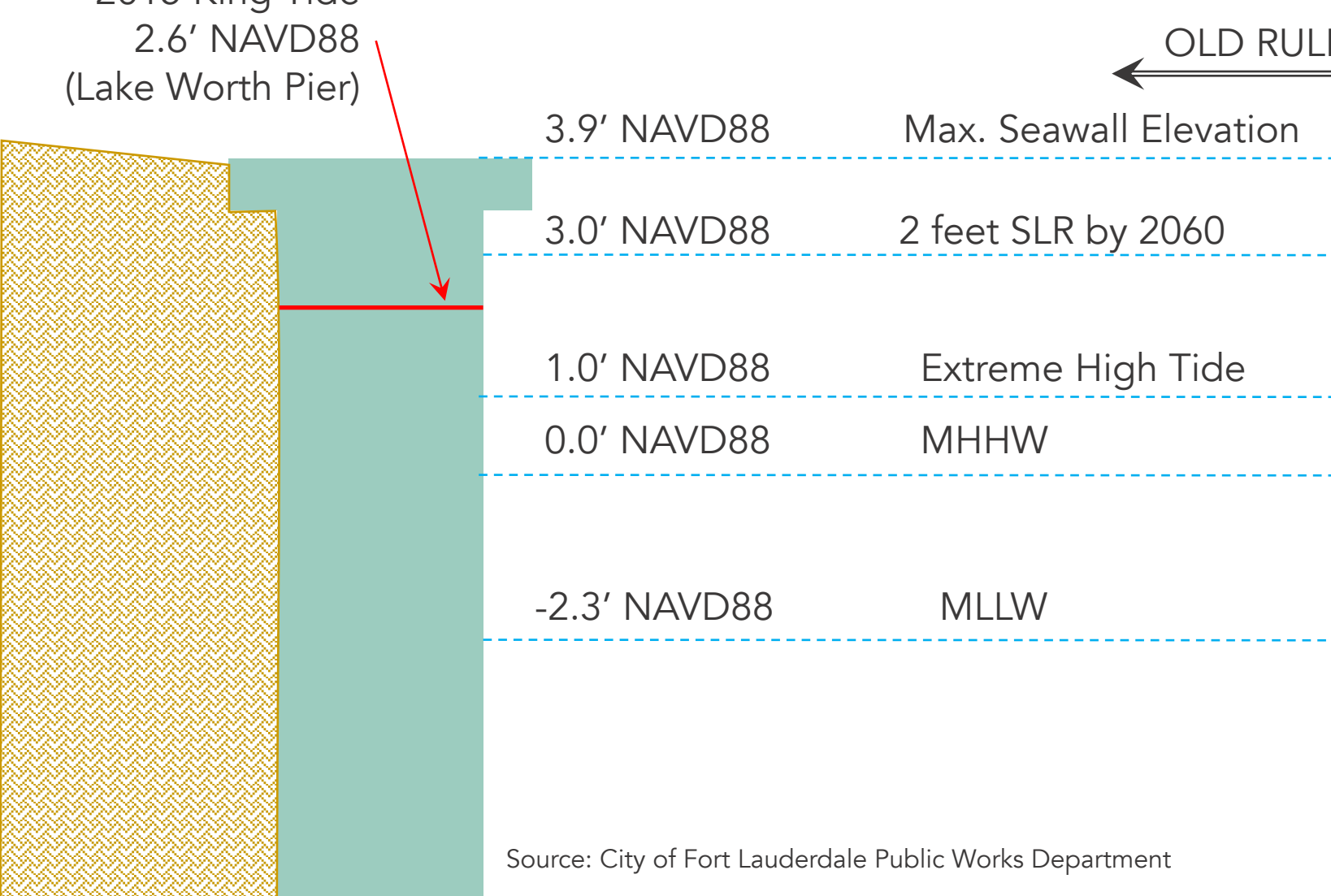


Building flexibility into our codes.



Seawall Ordinance in Fort Lauderdale

2015 King Tide
2.6' NAVD88
(Lake Worth Pier)



ORDINANCE NO. C-16-13

“The top surface of a seawall shall have a minimum elevation of 3.9 feet NAVD88....shall not exceed a maximum of the base flood elevation (BFE) as identified in the corresponding FEMA Flood Insurance Rate Map (FIRM) for the property....”

Policy must be part of the engineering solution.

1. There are a lot of unknown unknowns out there.
2. We must be able to use and communicate economics, but also remember to consider people and socioeconomics.
3. Everything is a communication tool.
4. Policy is an important tool for engineers – build a team.



An aerial view of a city canal, likely in Miami, showing several boats docked along the waterway. The canal is flanked by lush greenery and palm trees on the left, and modern high-rise apartment buildings on the right. In the background, a large, classical-style building with a central tower is visible. The sky is overcast.

Thank you.

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