

# Houston's Path to Resiliency



**HOUSTON  
PUBLIC WORKS**

*Byron King*  
*Houston Building Official*





# WHO WE ARE





# PURPOSE

together we create a strong foundation for Houston to thrive

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# 5 TO THRIVE VALUES

respect | ownership | communication | integrity | teamwork



# HOUSTON PUBLIC WORKS

**16,000**

LANE MILES OF  
STREETS

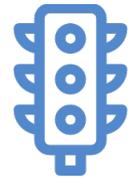


**3,900**

MILES OF  
STORM DRAINS

**163B**

GALLONS OF WATER  
TREATED PER YEAR



**2,450**

TRAFFIC SIGNALS

**2,800**

MILES OF  
ROADSIDE DITCHES



**5.8M**

WATERBILLS  
SENT PER YEAR

**467**

TYPES OF PERMITS



**\$2.7B**

ANNUAL BUDGET



**4,200**

EMPLOYEES



# ABOUT HOUSTON





# THE REGION

7.1 million people  
3.1 million jobs



Houston  
2.3 million people  
1 in 4 foreign born

# Industry Share of Houston MSA Employment

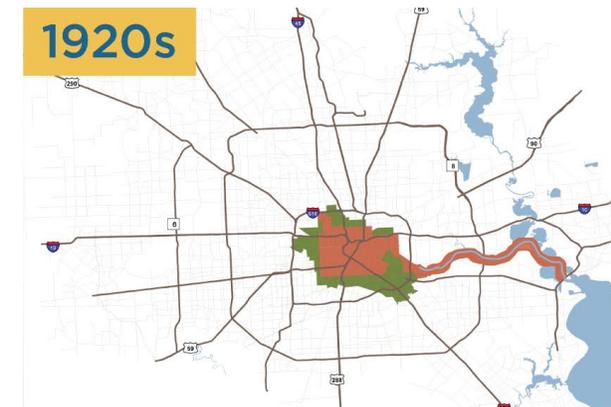


- 21%** Trade, Transportation, and Utilities
- 16%** Professional and Business Services
- 14%** Educational and Health Services
- 13%** Government
- 10%** Leisure and Hospitality
- 9%** Mining, Logging and Construction
- 7%** Manufacturing
- 4%** Finance and Insurance
- 1%** Information
- 4%** Other Services

Source:  
*Texas Workforce Commission, November 2021, not seasonally adjusted*

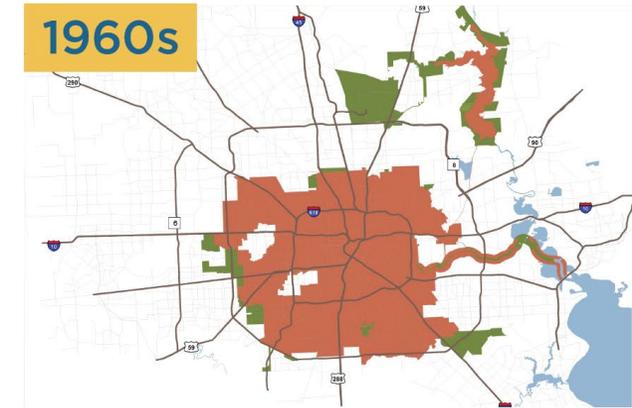
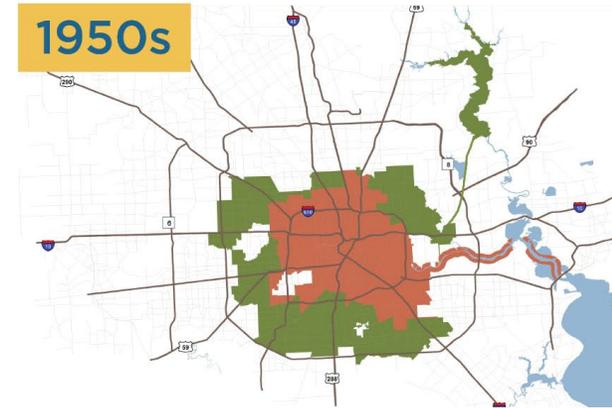
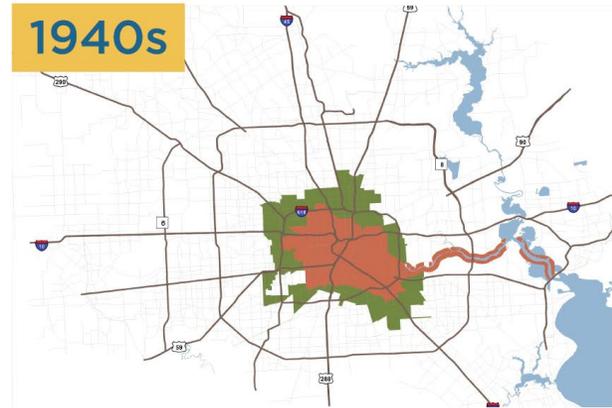
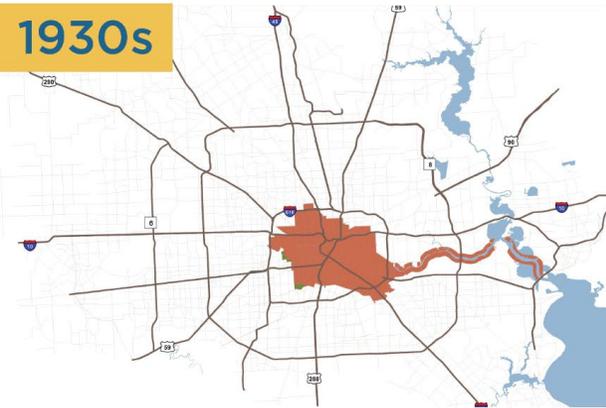


# 175 YEARS OF GROWTH



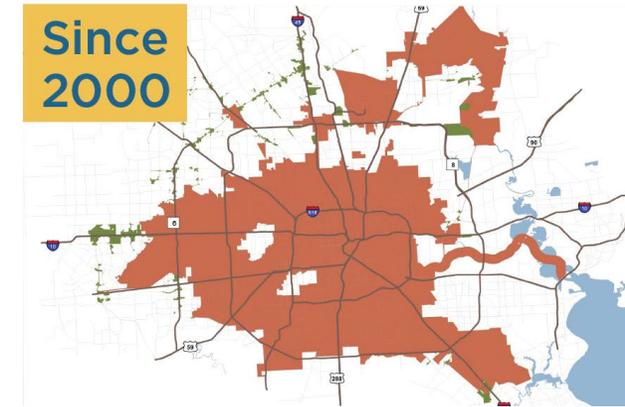
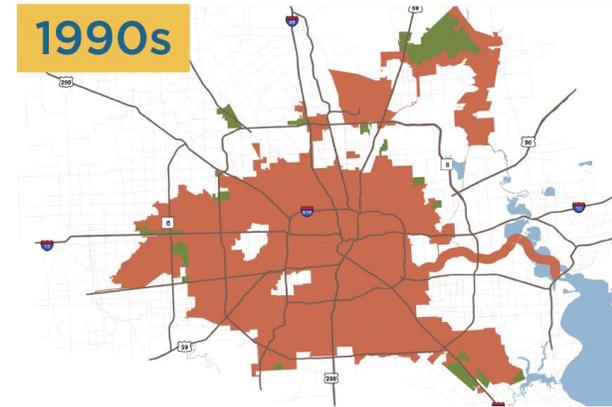
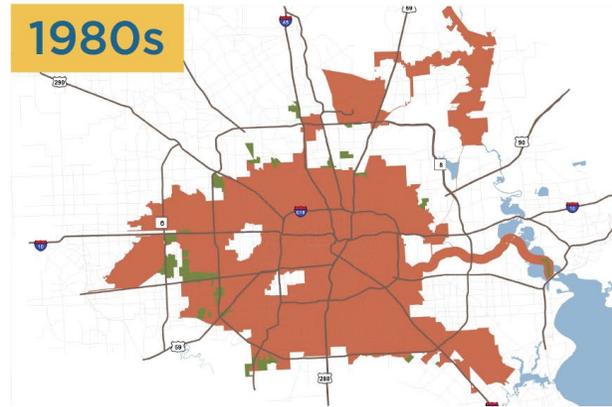
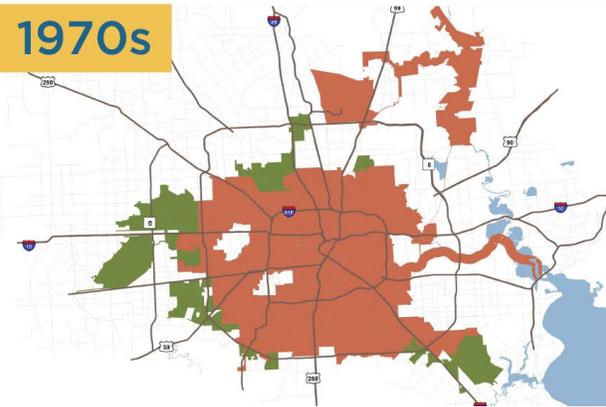


# 175 YEARS OF GROWTH





# 175 YEARS OF GROWTH





# WHY ARE WE HERE?





**“the capacity within  
an urban area to  
survive, adapt &  
thrive no matter  
what kind of chronic  
stresses & acute  
shocks they  
experience”**

# VISION FOR A RESILIENT HOUSTON

- + A HEALTHY PLACE TO LIVE
- + AN EQUITABLE, INCLUSIVE, AND AFFORDABLE CITY
- + A LEADER IN CLIMATE ADAPTATION
- + A CITY THAT GROWS UP, NOT OUT
- + A TRANSFORMATIVE ECONOMY THAT BUILDS FORWARD



## RESILIENT HOUSTON



### GOAL 11

WE WILL MODERNIZE HOUSTON'S  
INFRASTRUCTURE TO ADDRESS  
THE CHALLENGES OF THE FUTURE.

# 36 ADVANCE AND MODERNIZE BUILDING CODES AND STANDARDS.

Ensure that our building codes and standards are up to date and reflect the latest resilient building methods, technologies, and materials.



# 36 ADVANCE AND MODERNIZE BUILDING CODES AND STANDARDS.

**36.1 COMPREHENSIVELY REVIEW & UPDATE CURRENT BUILDING CODES.**

**36.2 ADOPT A MINIMUM 5 YR. UPDATE FREQUENCY FOR BUILDING CODES.**

**36.3 REVIEW AND AMEND LOT-SIZE & COVERAGE-AREA REQUIREMENTS FOR SUBDIVISIONS.  
PLANNING DEPT. WORKING..**

**36.4 REVIEW AND AMEND BUILDING ELEVATION REQUIREMENTS FOR STRUCTURES OUTSIDE OF THE REGULATORY FLOODPLAIN. OCE WORKING..**



## 36 ADVANCE AND MODERNIZE BUILDING CODES AND STANDARDS.

**36.5 ADOPT RESILIENT BUILDING CRITERIA FOR CITY-SPONSORED HOUSING RECOVERY AND CAPITAL IMPROVEMENT PROJECTS. HCD DEPT. WORKING...**

**36.6 IDENTIFY ADDITIONAL CRITICAL AND ESSENTIAL FACILITIES FOR FORTIFICATION. RESILIENCE OFFICE WORKING....**

**36.7 REVIEW AND AMEND WATERSHED-BASED REGULATIONS FOR DETENTION AND DRAINAGE REQUIREMENTS. OCE WORKING..**



# **BUILDING CODES**

## **IMPACT ON COMMUNITY RESILIENCE**





# ESCALATING THREAT OF NATURAL DISASTERS



South Carolina, **HURRICANE**

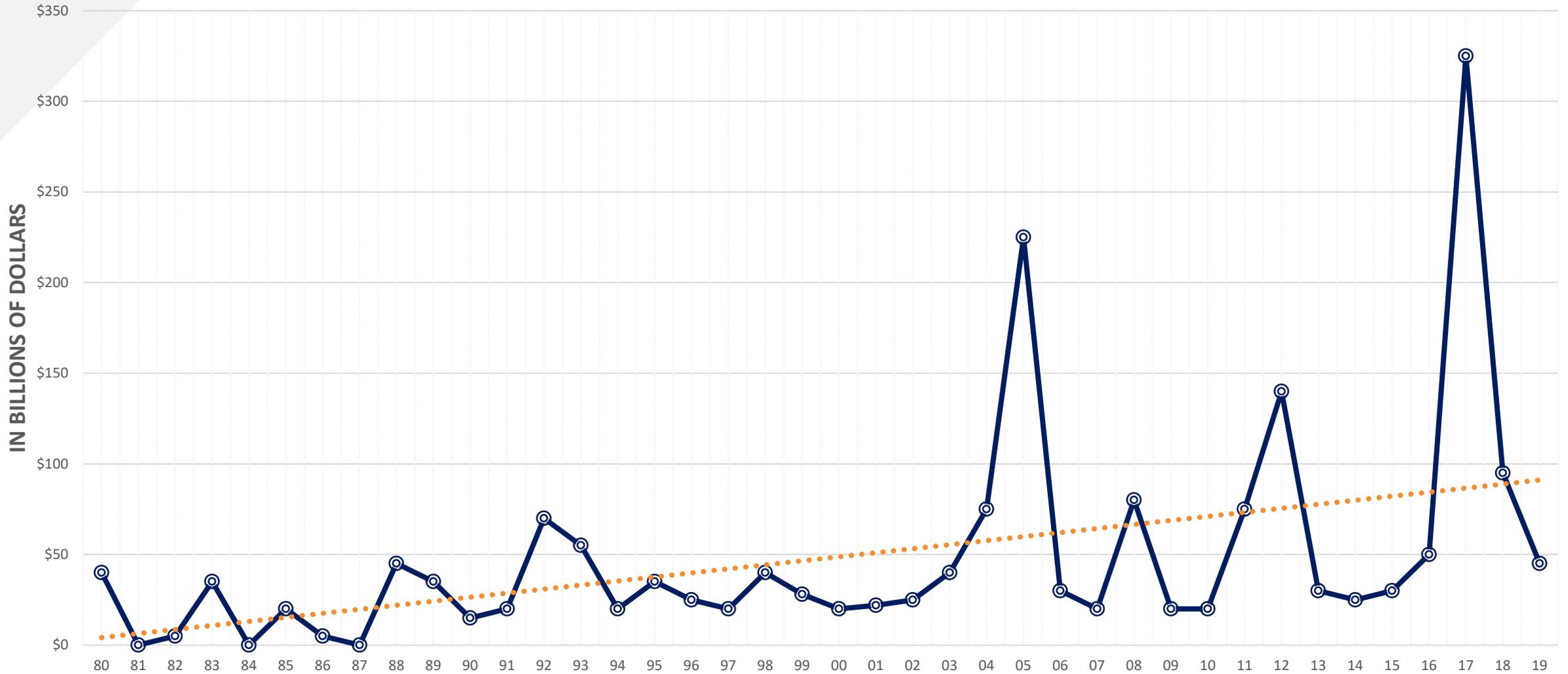


Illinois, **FLOODING**



# US COSTS OF NATURAL DISASTERS

NATURAL DISASTERS NUMBER AND COST OF BILLION-DOLLAR IN UNITED STATES





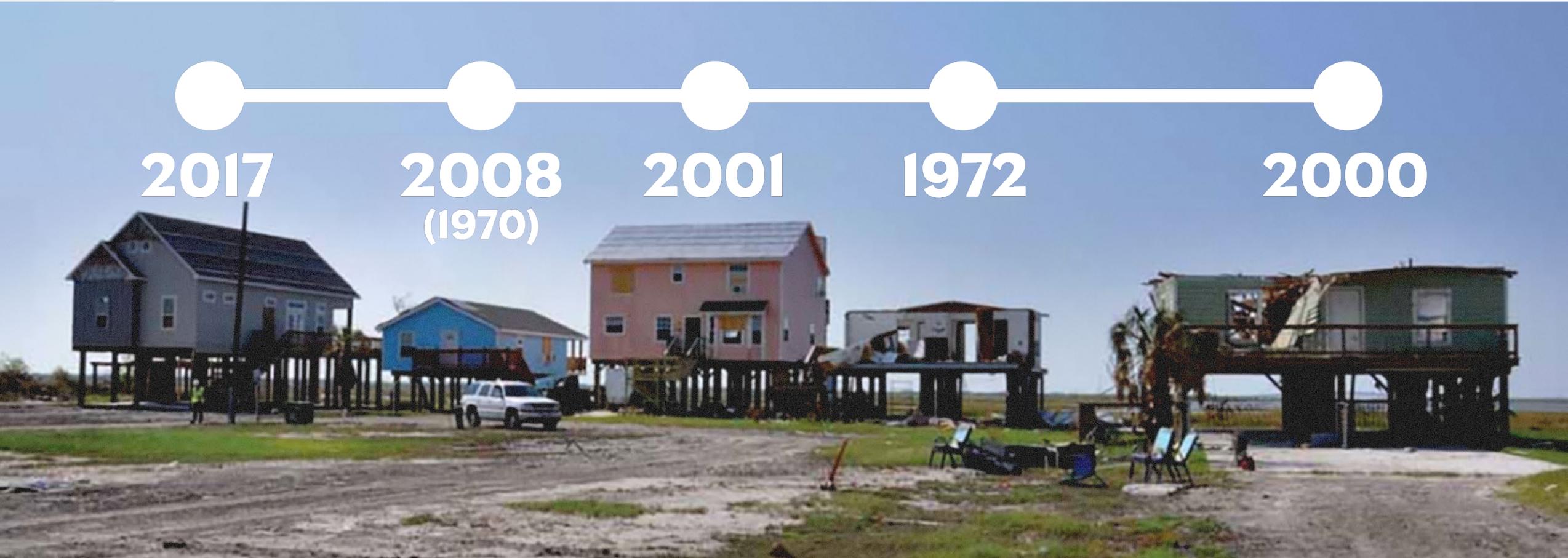
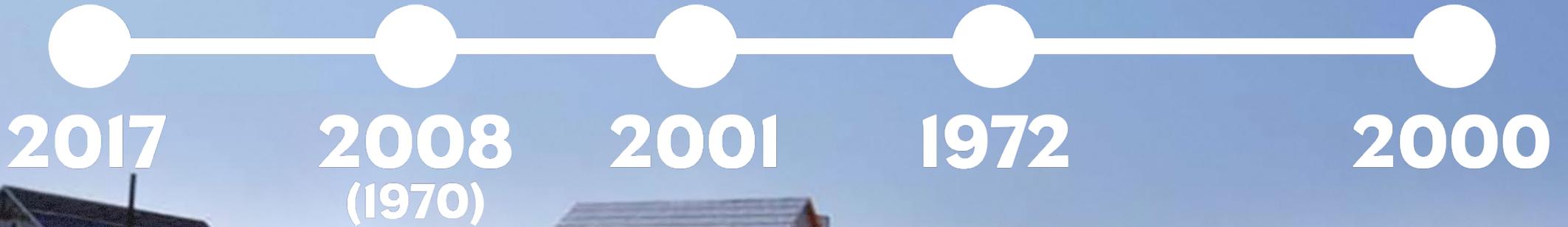
# HURRICANE HARVEY IMPACT

- **Over 300,000 households**
- **31% of structures in 100- and 500-year floodplain**
- **19% of structures outside the floodplain**
- **\$2.5 billion in damaged city facilities and infrastructure**





# IMPORTANCE OF BUILDING CODES





# PUBLIC EDUCATION IS NEEDED

## American homeowners:

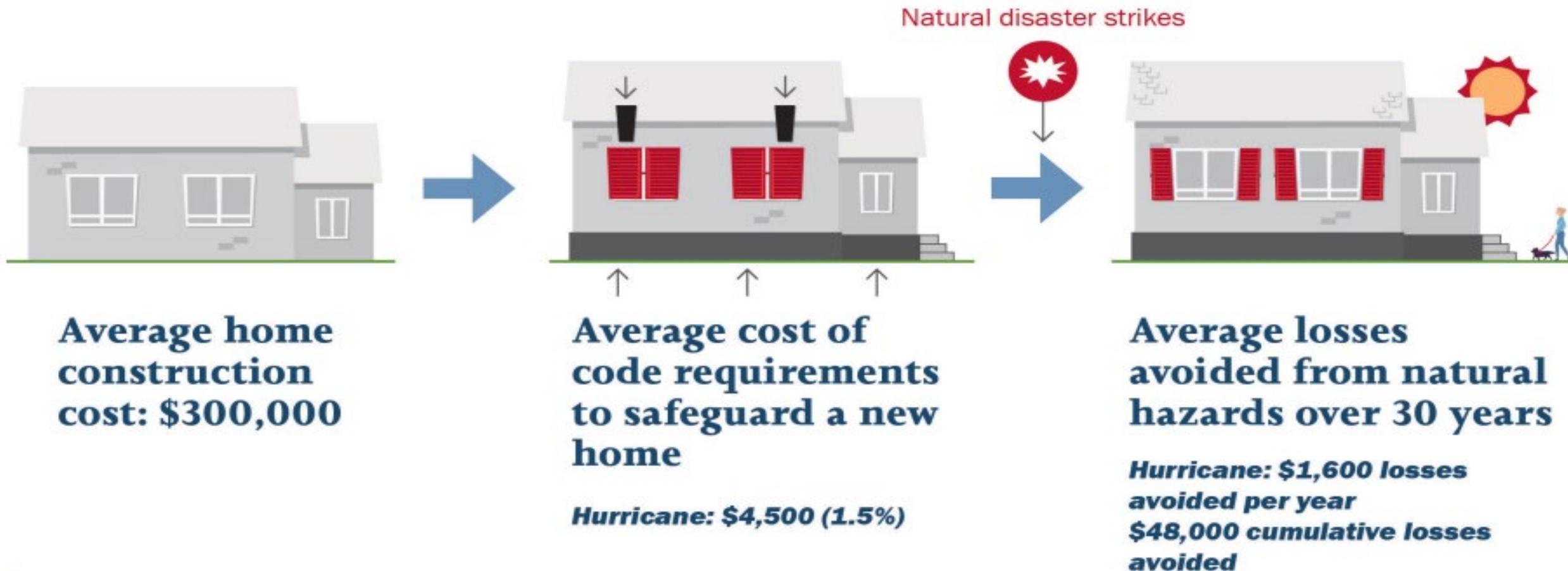


- Assume their community already has strong building codes
- Value “resilience” but don’t understand
  - What codes are
  - How codes are adopted
  - How codes protect them from hazards



# BUILDING CODES SAVE

## Building Codes Generate Big Benefits at a Low Cost



### Sources:

FEMA, "Building Codes Save: A Nationwide Study," 2020; (source of cost data).

NIBS, "Natural Hazard Mitigation Saves: 2019 Report," 2019; (source of dollar spent on mitigation).



**EVERY \$1 SPENT ON MITIGATION  
IN NEW CODE CONSTRUCTION  
SAVES \$11 IN DISASTER REPAIR  
AND RECOVERY COSTS**



# **BUILDING CODES SAVE**

- **FEMA’S study “Building Codes Save” shows that modern building codes lead to major reduction in property losses from natural disasters**
- **This study is based on a comparison of jurisdictions without modern building codes**



# BUILDING CODES SAVE

*Total losses avoided are based on building and content damages*



**Floods**

**Number of Post-2000 Structures**

786k

**Money Saved, annual average**

\$484 million



**Earthquakes**

2.4m

\$60 million



**Hurricane Winds**

9.2m

\$1.1 billion



# BUILDING CODES SAVE

2 OUT OF 3

Two out of three places prone to severe weather **don't have** the **building codes they need.**

See if your local building codes protect you.

**[InspectToProtect.org](https://InspectToProtect.org)**



# **BUILDING CODE MODERNIZATION**

**2021 BUILDING  
CODE ADOPTION**





# CONSTRUCTION CODE MODERNIZATION

**Adopt the 2021 code editions as a base code with local amendments that:**

- Help strengthen and ensure long-term sustainability and resiliency in Houston
- Do not reduce the fire- or life-safety provisions
- Comply with the intent of the code in quality, strength, effectiveness, fire resistance, durability, and safety



# CONSTRUCTION CODE MODERNIZATION

**Adopt best practices and standard procedures for future code adoptions:**

- Follow the same cycle as the International Code Council
- Ensure broad and diverse stakeholder engagement
- Comply with the intent of the code in quality, strength, effectiveness, fire resistance, durability, and safety



# THANK YOU!



[HoustonPublicWorks.org](https://HoustonPublicWorks.org)



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