



CONSTRUCTION CODE MODERNIZATION PROJECT - HOUSTON'S 2021 CODE ADOPTION



**PRESENTATION TO
CCIM HOUSTON/GULF COAST CHAPTER
JUNE 8, 2023**





HOUSTON PUBLIC WORKS WHO WE ARE



PURPOSE

together we create a strong foundation
for Houston to thrive



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



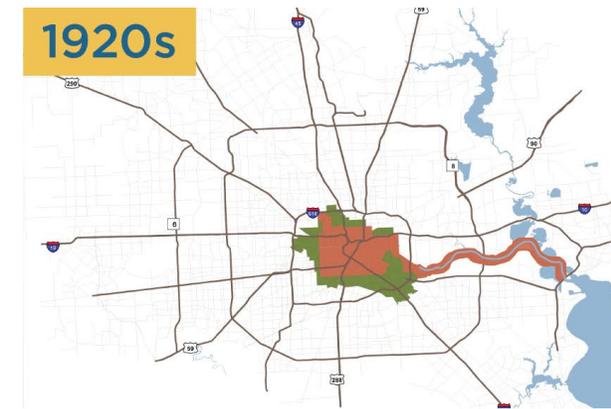
4,200
EMPLOYEES



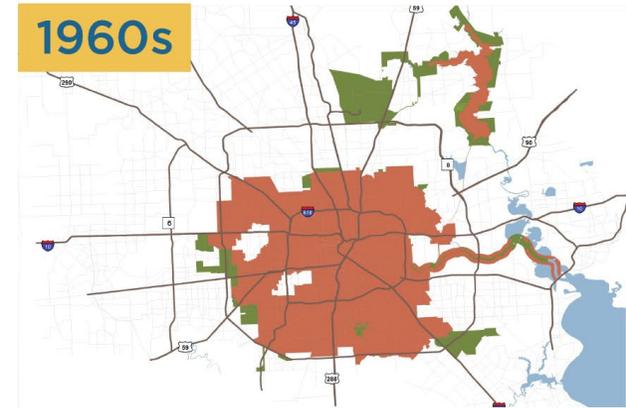
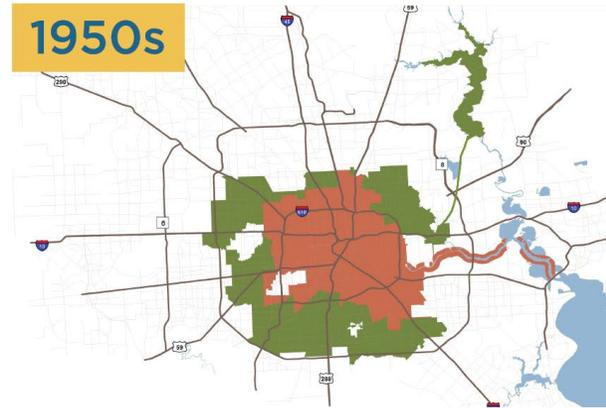
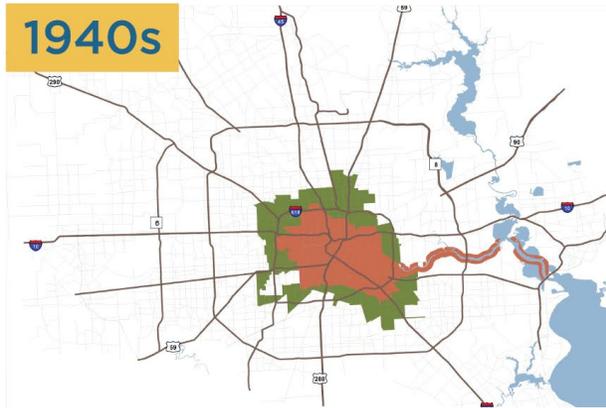
HOUSTON LOOKING BACK AND LOOKING FORWARD



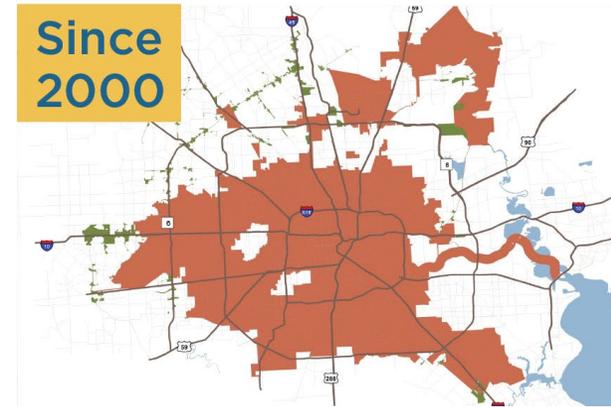
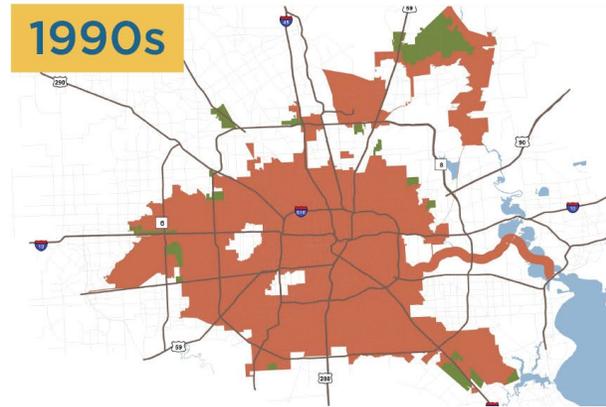
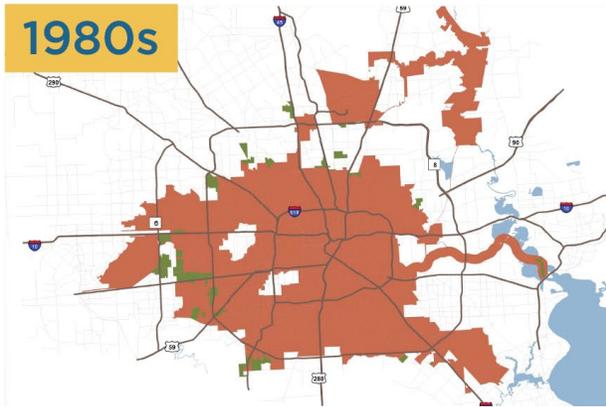
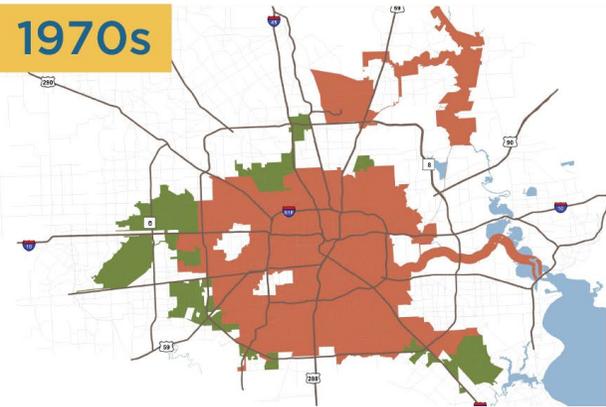
175 YEARS OF GROWTH



175 YEARS OF GROWTH



175 YEARS OF GROWTH



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

CLIMATE CHANGE AND BUILDING CODES

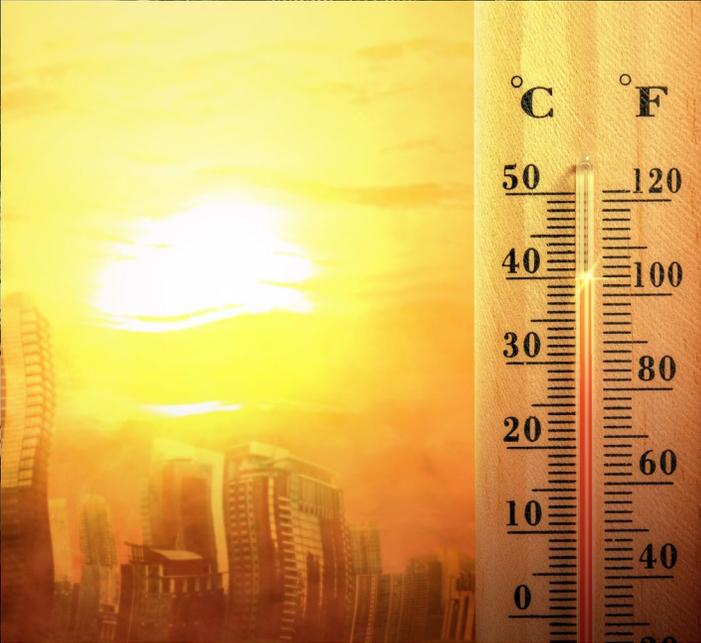


IMPACT OF CLIMATE CHANGE

In August 2017, here at home in Houston, 52 inches of rain in a 5-day period

- 31% of structures in 100- and 500-year floodplain
- 19% of structures outside the floodplain
- \$2.5 billion in damaged city facilities and infrastructure





FROM EXTREME COLD TO HEAT

1. Storm Uri Feb. 2021

ERCOT was four and a half minutes away from complete collapse

2. Heatwave July 2022

Record-setting July comes on the heels of our hottest June on record and our second hottest May on record

IMPORTANCE OF BUILDING CODES

2017 2008
(1970) 2001 1972 2000





Building Codes – Examples of Resiliency

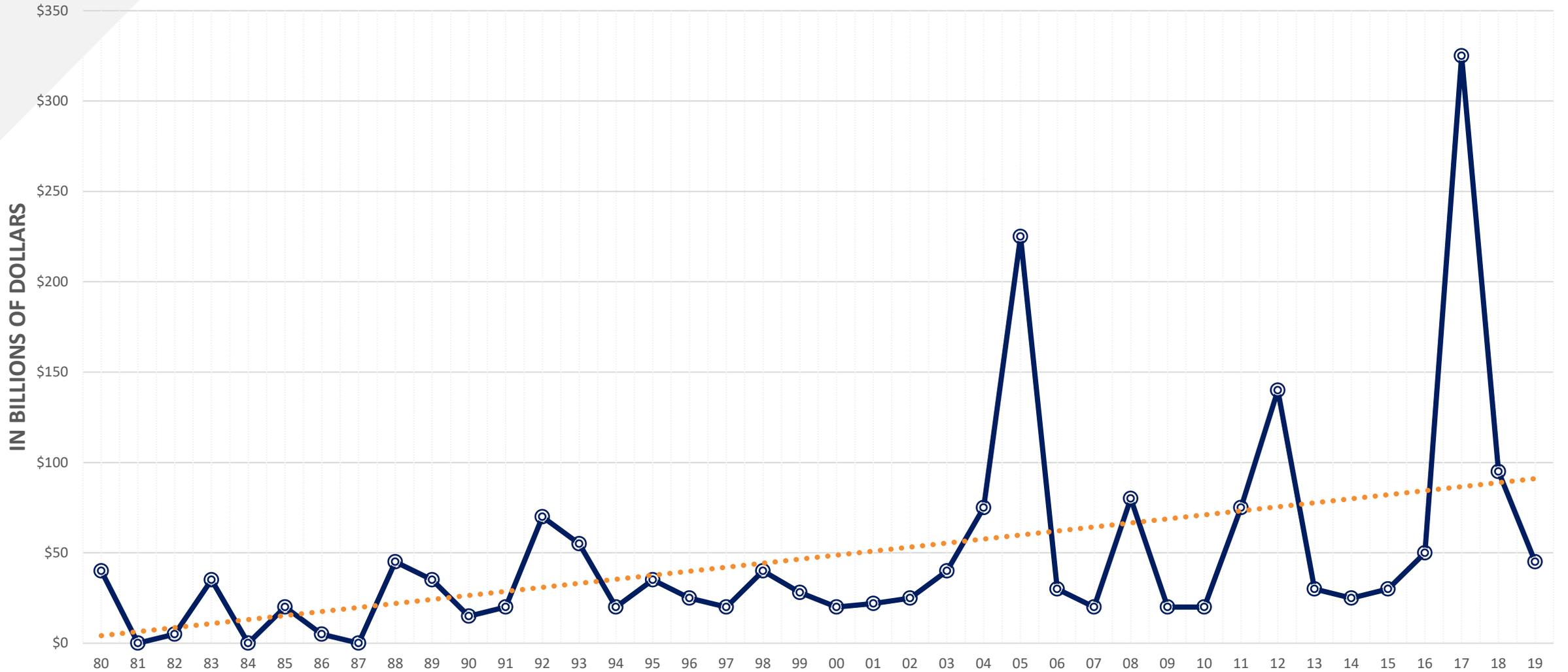
Babcock Ranch –
SURVIVED IAN –
“IT WAS ALL BY
DESIGN.”

CLIMATE CHANGE BY THE NUMBERS

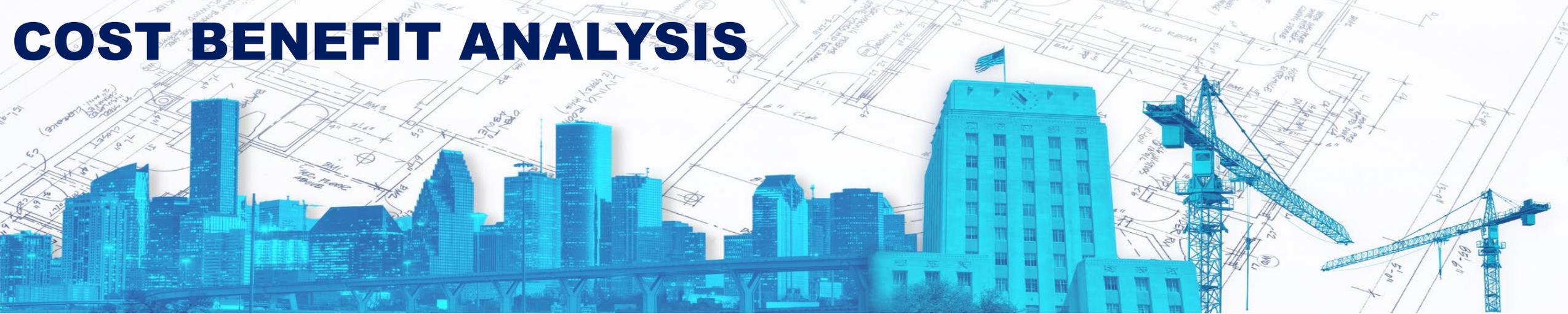


US COSTS OF NATURAL DISASTERS

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



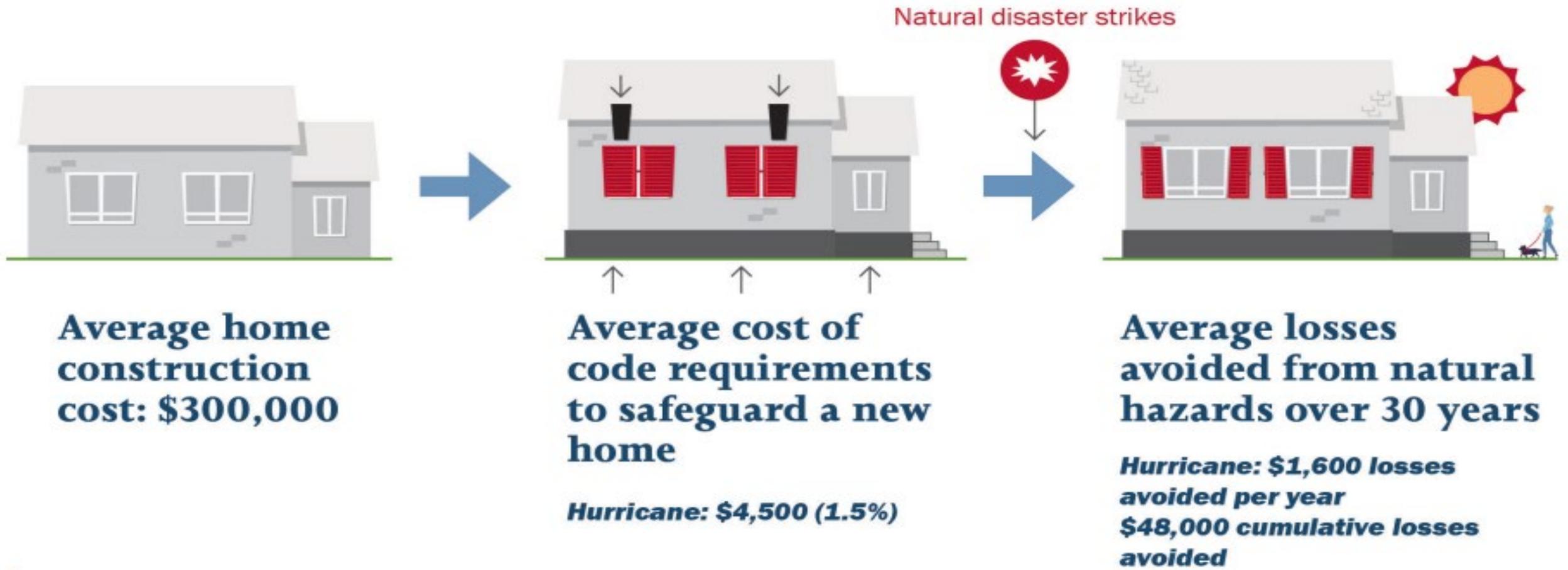
COST BENEFIT ANALYSIS



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

BUILDING CODES SAVE

Building Codes Generate Big Benefits at a Low Cost



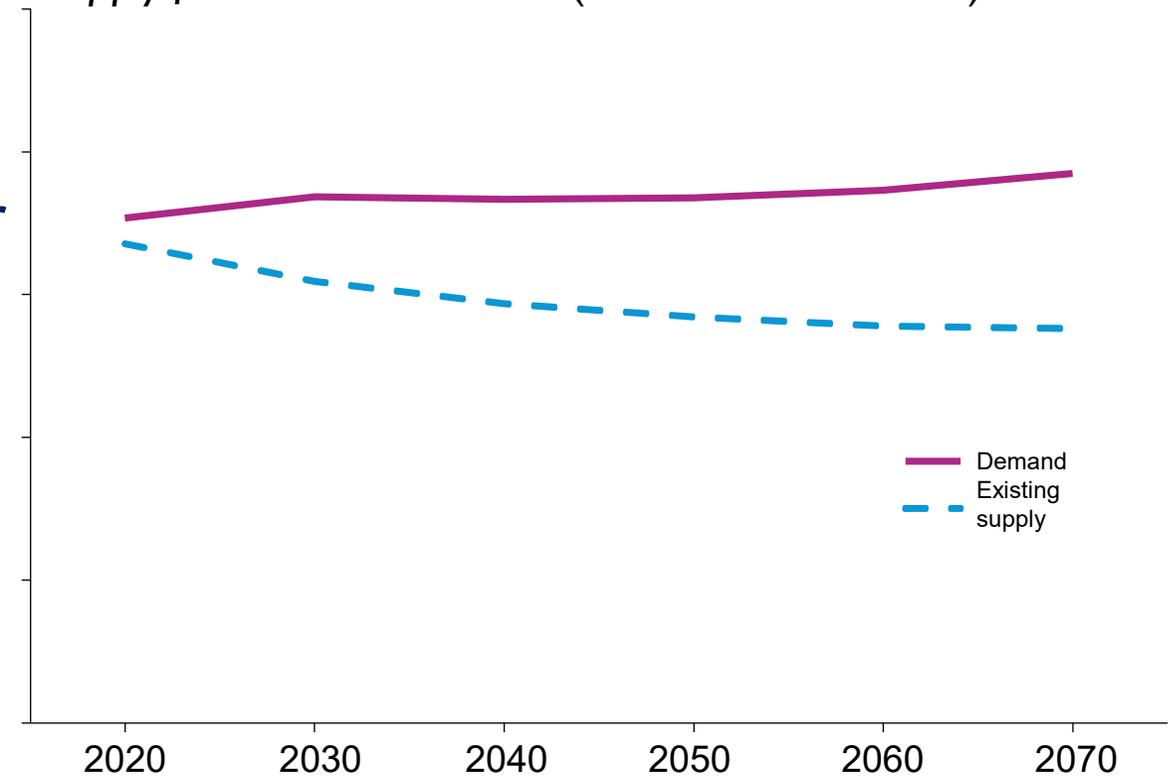
Sources:

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).

HOUSTON'S WATER PROJECTIONS AND NEED

- **Between 2020 and 2070 - Water demand is projected to increase by 34% for Houston vs. 9% for the State of Texas**
- **In Texas, current supply is projected to decline by approximately 18% and Houston has a water need or potential shortage of 220,772 acre-feet/year**
- **About 18% to 28% of Houston's future water supply will need to come from water conservation**
- **Every gallon of water has an energy "footprint"**

**Projected total annual water demand and existing water supply for all sectors in Texas (millions of acre-feet)*



**2022 State Water Plan, Water for Texas, by Texas Water Development Board*

HOUSTON'S ENERGY PROJECTIONS AND NEED

- a. It takes 95 litres of water (25 gallons) to produce one kilowatt-hour of electricity (news.thomasnet.com)
- b. One megawatt can power around 1,000 U.S. homes on a typical day, but only about 200 homes on a hot summer day in Texas.
- c. Total projected peak supply for Texas summer 2023 is 97,138 megawatts (MW). The projected summer demand forecast (usage) is 82,739 MW. This would be a new record for electricity demand in Texas. The current highest demand in Texas grid history was 80,000 MW on July 20, 2022.
- d. On a normal day, 20% of ERCOT load is residential electricity. But on a scorching hot day? Or a super cold day? Residential electricity jumps to almost 50% of the total ERCOT load.

According to **Electricity Reliability Council of Texas (ERCOT) May 2023 Capacity, Demand and Reserves Report:**

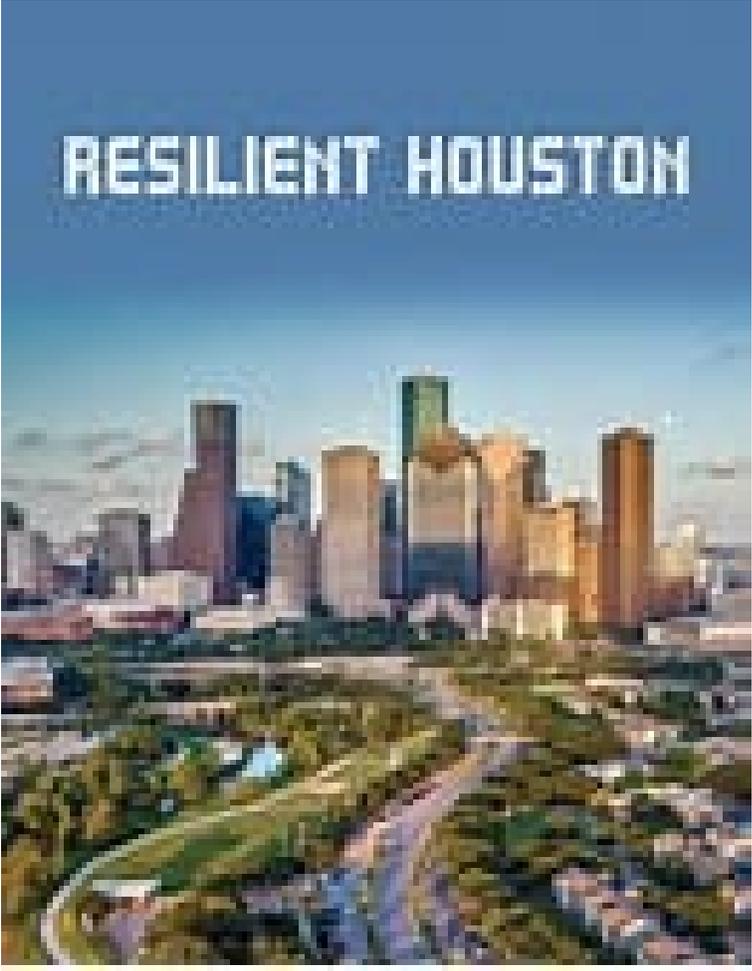
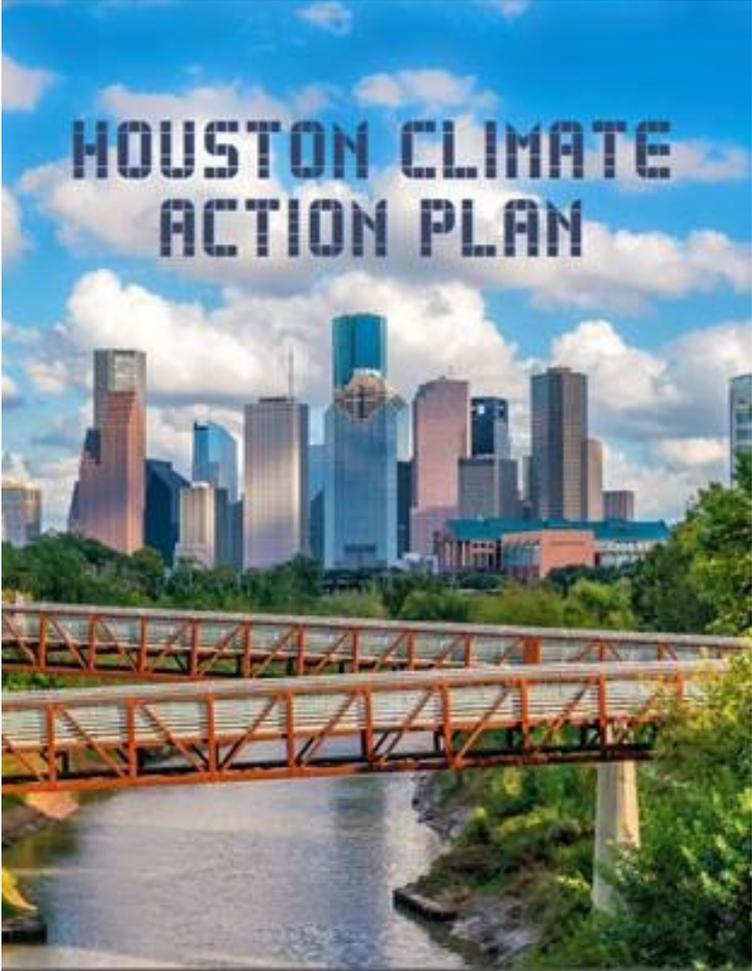
2023	2024	2025	2026	2027
14.8%	33.9%	44.2%	44.1%	42%

BUILDING CODES HOUSTON'S RESILIENT STRATEGY



CLIMATE CHANGE AND RESILIENCY

BUILDING CODES MAKE A STRONG FOUNDATION



2021 HOUSTON'S BUILDING CODES

SOLAR READY



ELECTRIC VEHICLE (EV) READY



ASCE 7 – 22

ICC 2024 HOUSTON'S BUILDING CODES

- ✓ **Improves roof underlayment requirement in high wind regions and water infiltration in hurricane prone regions and removes staples as fastening method in these regions.**
- ✓ **Provides direction to include structural performance in roof replacement and roof recover applications.**
- ✓ **Moves certain I occupancies/uses from Risk Category III to Risk Category IV.**
- ✓ **Power, water, and wastewater treatment facilities included in Risk Category IV.**
- ✓ **Provide special inspection criteria for metal building systems.**

CONSTRUCTION CODE MODERNIZATION PROJECT – JUNE 2022 -

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

BUILDING ON AND CONNECTING EXISTING EFFORTS



2021 BUILDING CODE ADOPTION PROCESS



STRUCTURE AND PROCESS

**TFG-1
Commercial**

12 Community Participants

28 City Staff

**TFG-2
Residential**

7 Community Participants

26 City Staff

**TFG-3
Energy Conservation**

6 Community Participants

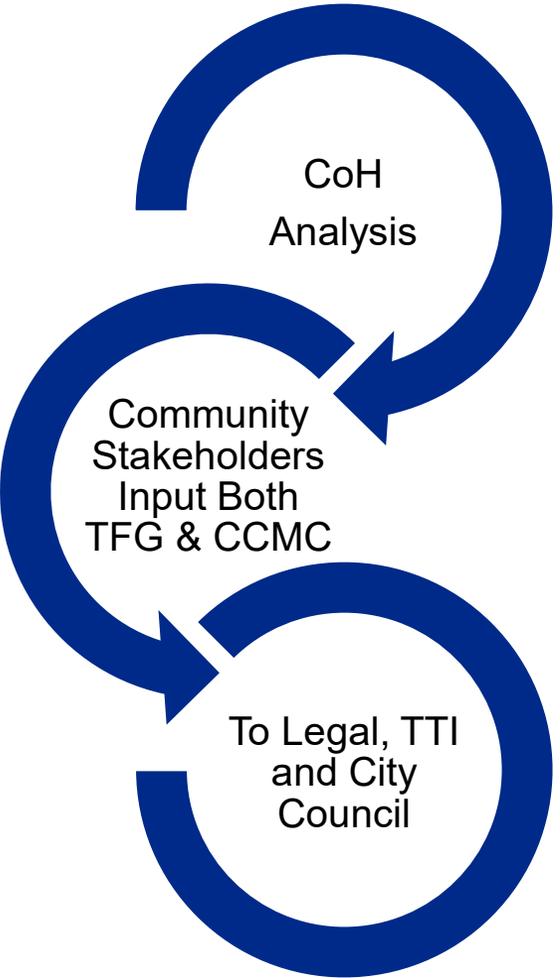
13 City Staff

**TFG-4
MEP**

17 Community Participants

20 City Staff

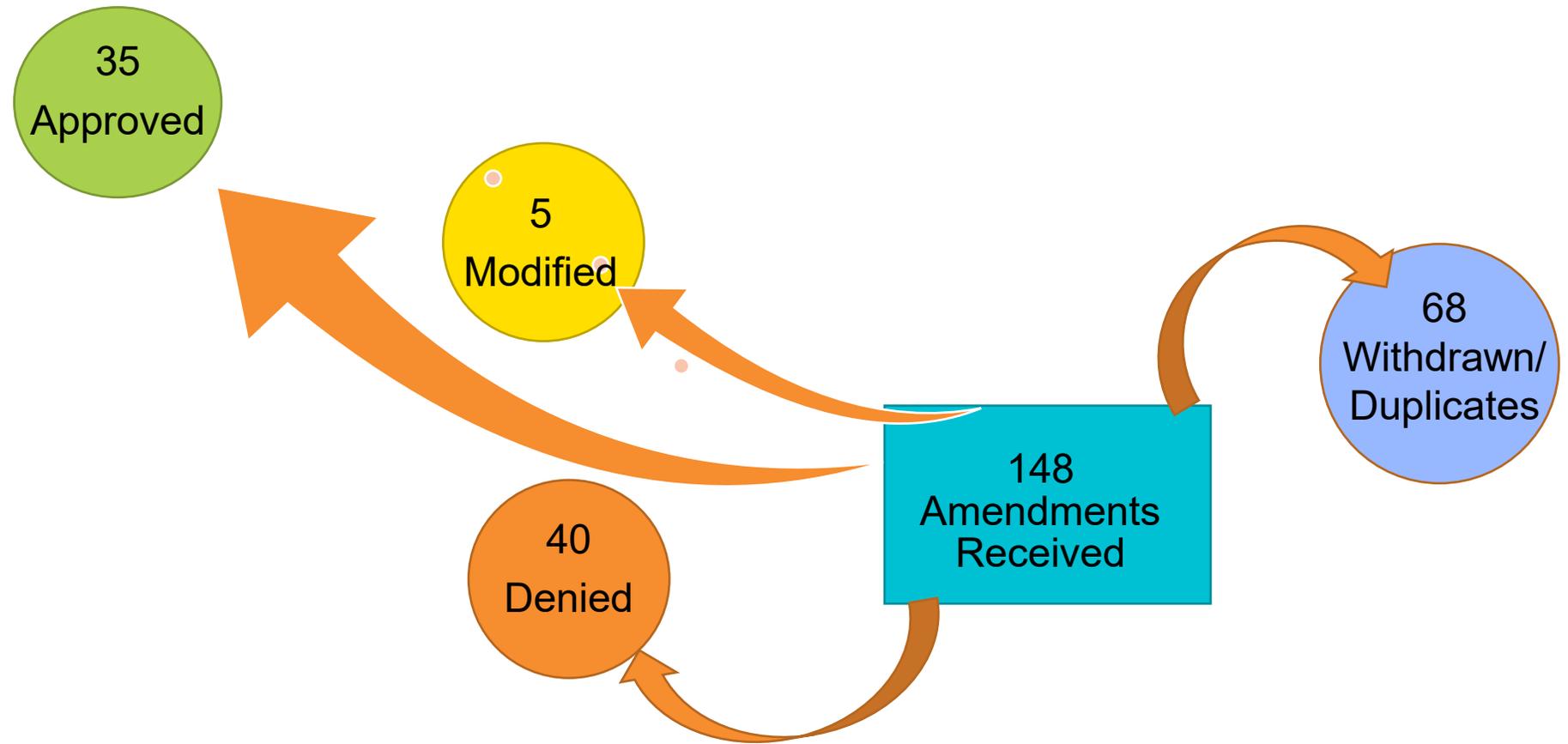
STRUCTURE AND PROCESS



COMMUNITY STAKEHOLDERS

- Air Alliance for Houston
- American Fire Sprinkler Association (AFSA)
- American Fire Systems (AFS)
- American Institute of Architects (AIA)
- American Society of Civil Engineers (ASCE)
- American Society of Plumbing Engineers (ASPE)
- American Society of Sanitary Engineering (ASSE)
- ASHRAE
- Associated Builders & Contractors of Texas
- Associated General Contractors (AGC) - Houston
- Association of Chief Operating Engineers
- Audubon Houston
- Building Commissioning Association (BCxA)
- Building Officials Association of Texas (BOAT)
- Construction Industry Council-Houston Branch (HCIC)
- Construction Specifications Institute (CSI) Houston Chapter
- Greater Houston Builders Association (GHBA)
- Greater Houston Texas Restaurant Association (GHTRA)
- Greentown Labs
- Harris County Flood Control District
- Historic Buildings
- Historic Houston
- Hotel & Lodging Association of Greater Houston (H&LAGH)
- Houston Apartment Association (HAA)
- Houston Archeological and Historical Commission and AIA Historic Resource Committee
- Houston Building Owners & Managers Association (BOMA)
- Houston Business Roundtable (HBR)
- Houston Contractors Association (HCC)
- Houston Galveston Area Council (HGAC)
- Houston Gulf Coast Building & Construction Trades Association (HGCBCTA)
- Houston Habitat
- Houston Housing Collaborative (HHC)
- Independent Electrical Contractor (IEC)
- Institute of Real Estate Management (IREM)
- International Association of Plumbing & Mechanical Officials (IAPMO)
- International Code Council (ICC)
- Mechanical Contractors Association of Houston (MCAA)
- NAIOP, the Commercial Real Estate Development Association
- National Association of Manufacturers (NAM)
- National Electrical Contractors Association (NECA)
- National Fire Sprinkler Association (NFSA)
- National Systems Contractors Association (NSCA)
- New Hope Housing
- Sierra Club
- Society of Fire Protection Engineers (SFPE)
- South Central Partnership for Energy Efficiency as a Resource (SPEER)
- Super Neighborhood Representatives
- Texas Community Watershed Partners
- Texas Institute of Building Design (TIBD)
- Texas Society of Architects
- Texas Water Quality Association (TWQA)
- University of Houston (UH)
- Urban Land Institute (ULI)
- US Green Building Council (USGBC) of Houston (USGBC)
- Water Quality Association (WQA)

AMENDMENTS PROCESSED TO DATE*



*As of 04.28.23

PUBLIC COMMENT OPPORTUNITIES

TFG-1
Commercial

108 DAY

PUBLISHED
3 TIMES

TFG-2
Residential

93 DAYS

PUBLISHED
2 TIMES

TFG-3
Energy
Conservation

70 DAYS

PUBLISHED
2 TIMES

TFG-4
MEP

67 DAYS

PUBLISHED
2 TIMES

2021 BUILDING CODES SIGNIFICANT COMMERCIAL CHANGES



2021 SIGNIFICANT CODE CHANGES

Clarify the Intent and Scope for Items Affecting
Industrial/Retail/Office/Multi-family



- 1 Updates to sections that cover atrium design
- 2 Allowable building heights
- 3 Separated occupancies.
- 4 Occupied roof allowances

2021 SIGNIFICANT CODE CHANGES

Historic Buildings



1

Undergoing a Change of Use/Occupancy
Comply with International Existing Building Code (IEBC)

2

New Construction
Comply with International Building Code (IBC)

3

Exceptions
Means of Egress Widths, Door Swings, Interior Finishes, Stairways, etc., that are provided in the IEBC.

2021 SIGNIFICANT CODE CHANGES

Office Buildings



1

Undergoing a Change of Use/Occupancy
Comply with International Existing Building Code (IEBC)

2

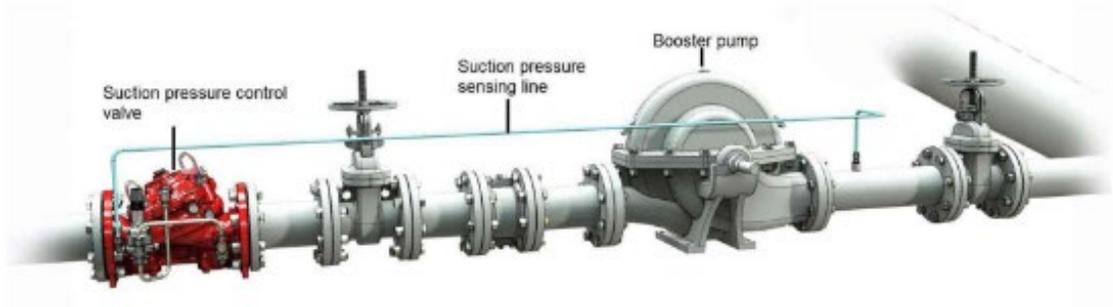
New Construction
Comply with International Building Code (IBC)

3

Exceptions
Specifically provided in Chapter 10 the IEBC.

2021 SIGNIFICANT CODE CHANGES - HOUSTON

Break Tanks for Fire Pumps



low suction pressure control valve

1

Previous code required break tanks for any installation of a fire pump

2

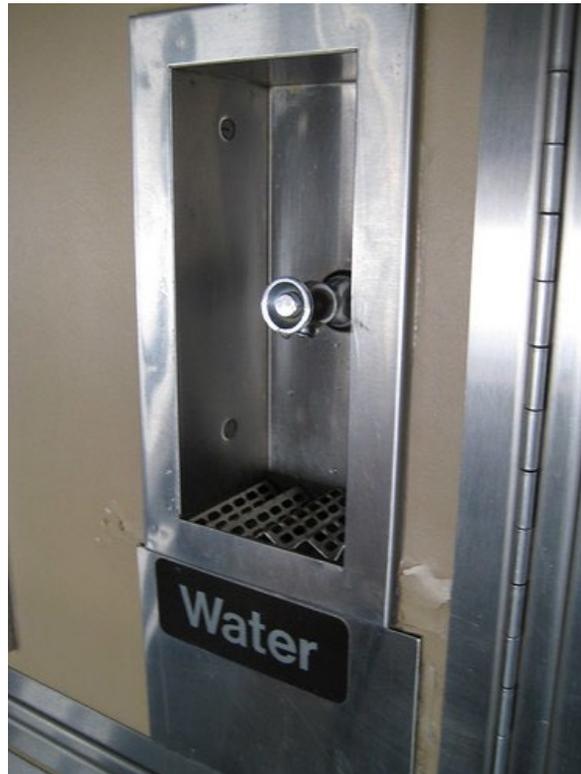
New amendment to eliminate the mandatory requirement for a break tank with a fire pump installation

3

Perform hydraulic calculations to determine if city water supply will fall below 20 psi prior to needing a break tank with fire pump installation.

2021 SIGNIFICANT CODE CHANGES - HOUSTON

Water Dispensers (Drinking Fountains)



1

Confusion on the requirements for installation of drinking fountains

2

Prior to 2015 drinking fountains could be eliminated. 2015 HBC required drinking fountains.

3

New amendment will follow IPC to allow substitution of 50% of drinking fountains with other water dispensing methods.

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2021 SIGNIFICANT CODE CHANGES - HOUSTON

Adoption of the International Existing Building (IEBC) Code



Houston's Gulf Building

1

Implemented in 2022 with the 2015 Codes

2

Eliminated the appendix chapters L and M of the prior Houston Amendments.

3

Adopting the IEBC to provide additional clarification on renovations to existing buildings

COMMERCIAL PERMITTING INFORMATION

The Houston Permitting Center website provide a variety of information including:

- Commercial permitting 101 presentation:

<https://www.houstonpermittingcenter.org/media/1926/download?inline>

- Occupancy inspection handout: <https://www.houstonpermittingcenter.org/media/2231/download>

- Occupancy brochure for existing buildings:

<https://www.houstonpermittingcenter.org/media/2226/download>

- Most common plan review comments:

<https://www.houstonpermittingcenter.org/media/7101/download>

- One Stop Qualifications for Commercial:

<https://www.houstonpermittingcenter.org/media/1936/download?inline>

CONTACT US



[www.houstonpermittingcenter.org/
construction-code-modernization](http://www.houstonpermittingcenter.org/construction-code-modernization)

For general information email us at:

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To Submit a Code Amendment:

CodeAmendment.CCM@houstontx.gov

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THANK YOU!



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