



# ATLAS 14: AUSTIN'S NEW UNDERSTANDING OF FLOOD RISK

Watershed Protection Department  
Building and Fire Code Board of Appeals | September 25, 2019





## Overview

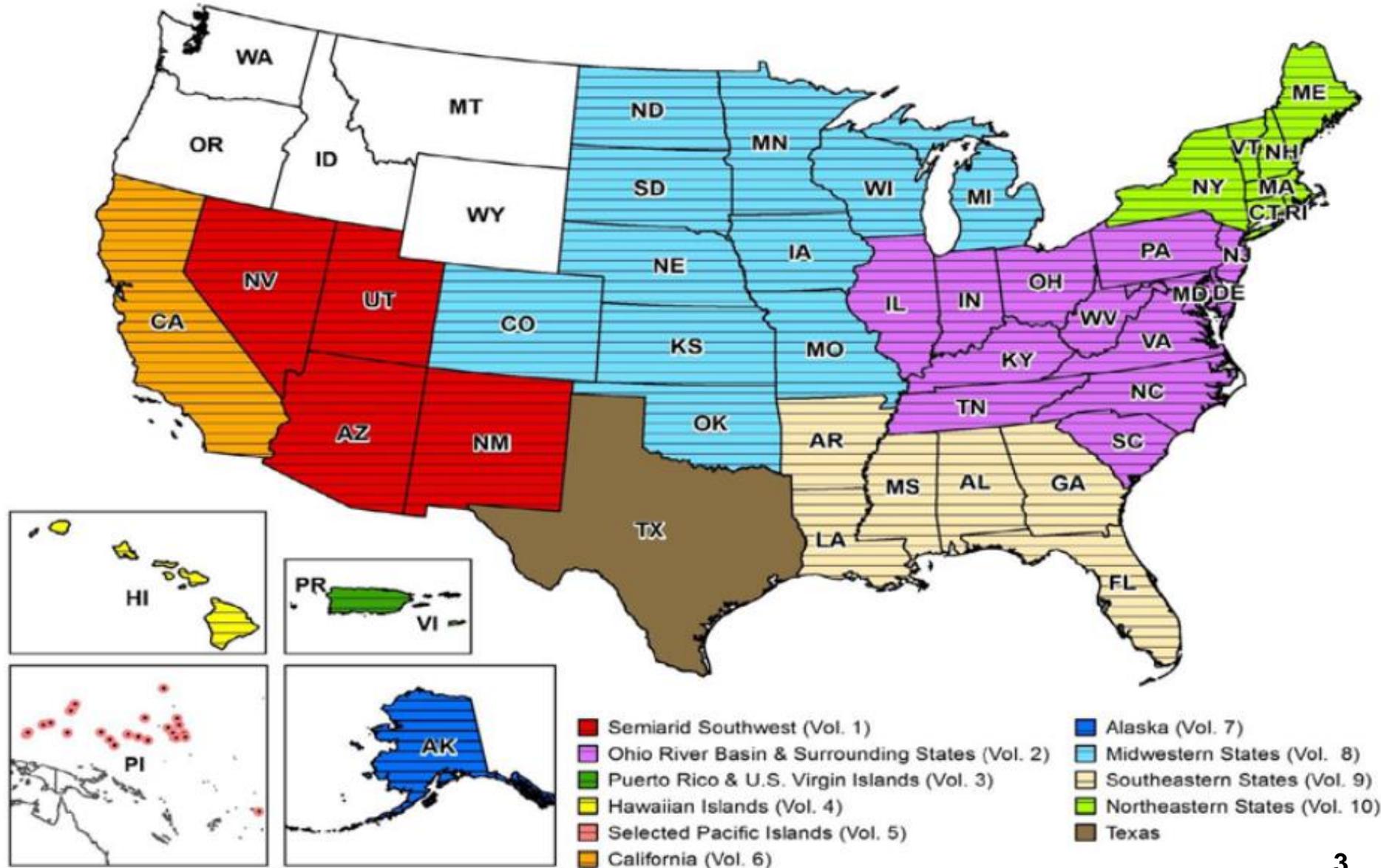
- Atlas 14 background
- Summary of key impacts from Atlas 14
- Recommended response
- Outreach
- Building code changes
- Timeline

# Atlas 14 Background

- Nationwide study of rainfall intensities

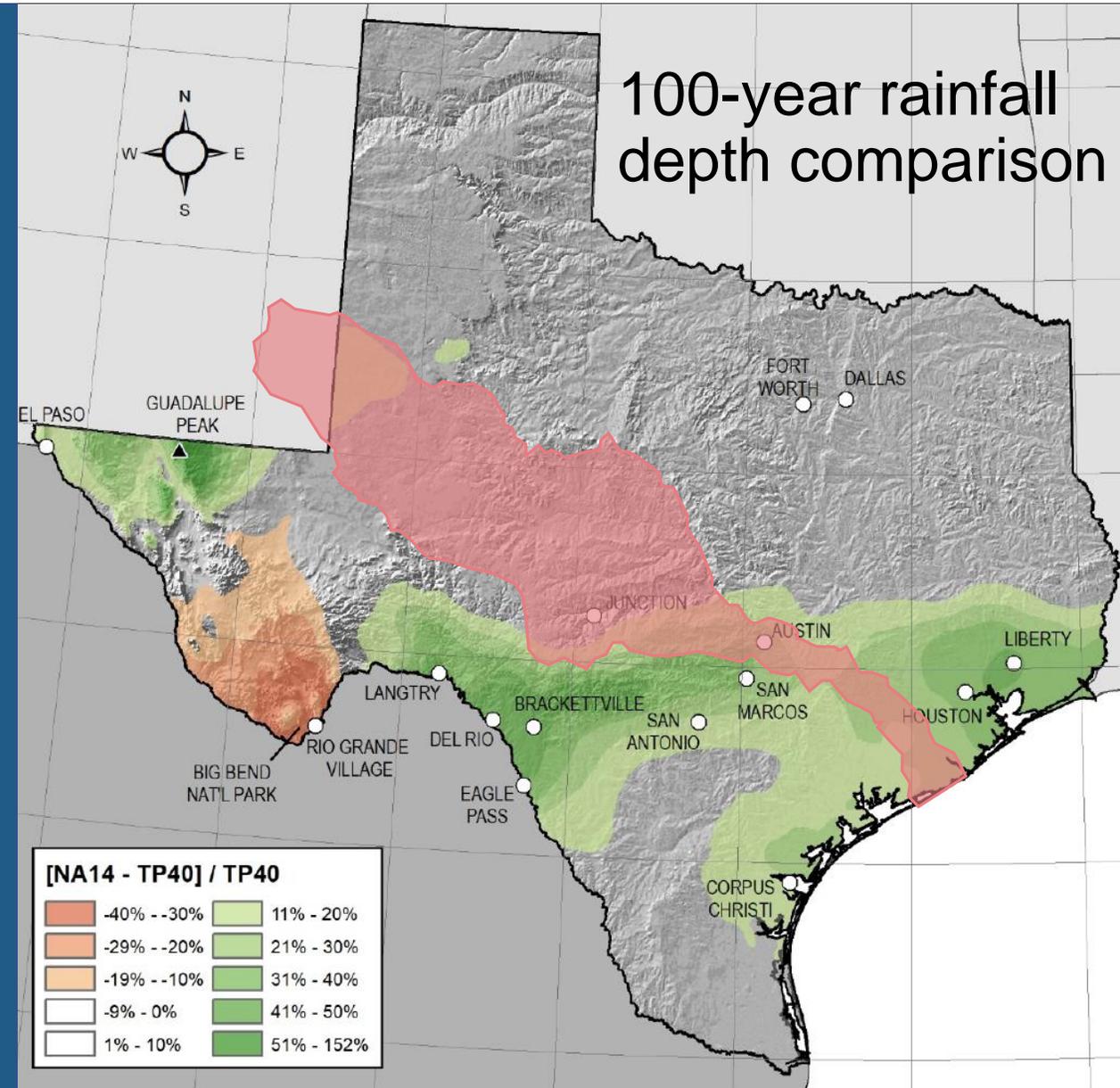
## Partners

- **Federal** NOAA, National Weather Service, U.S. Army Corps of Engineers, Federal Highway Administration
- **State/Local** TxDOT, Harris County Flood Control District, City of Austin, et al.



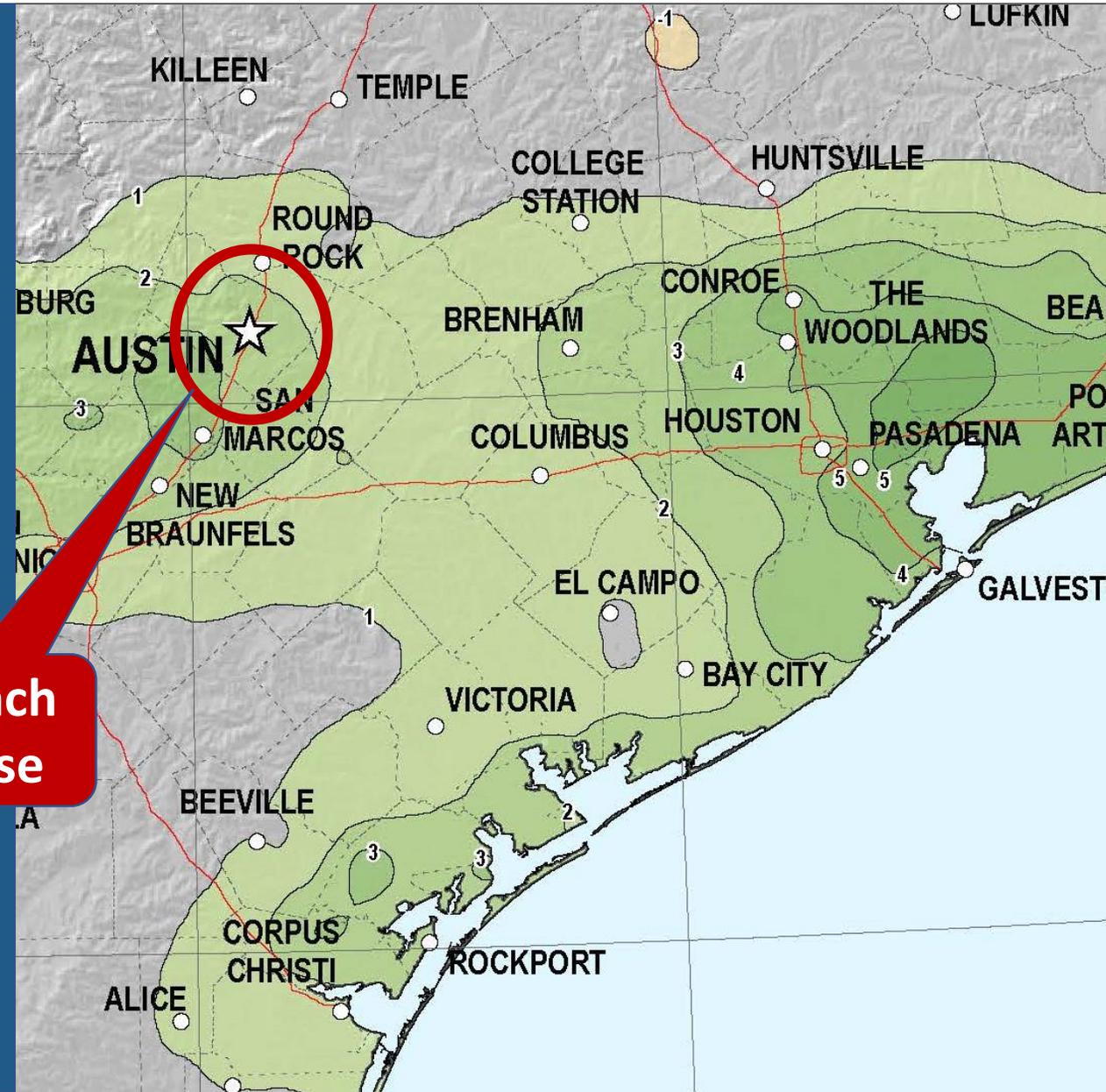
# Atlas 14 Rainfall Changes

- Nationwide examination of historic rainfall data
- Adds data from 1961 – 2017
- Colorado River watershed upstream of Austin not significantly impacted



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- Adds data from 1961 – 2017
- Colorado River watershed not significantly impacted



2 – 3 inch  
increase



What does the new understanding of

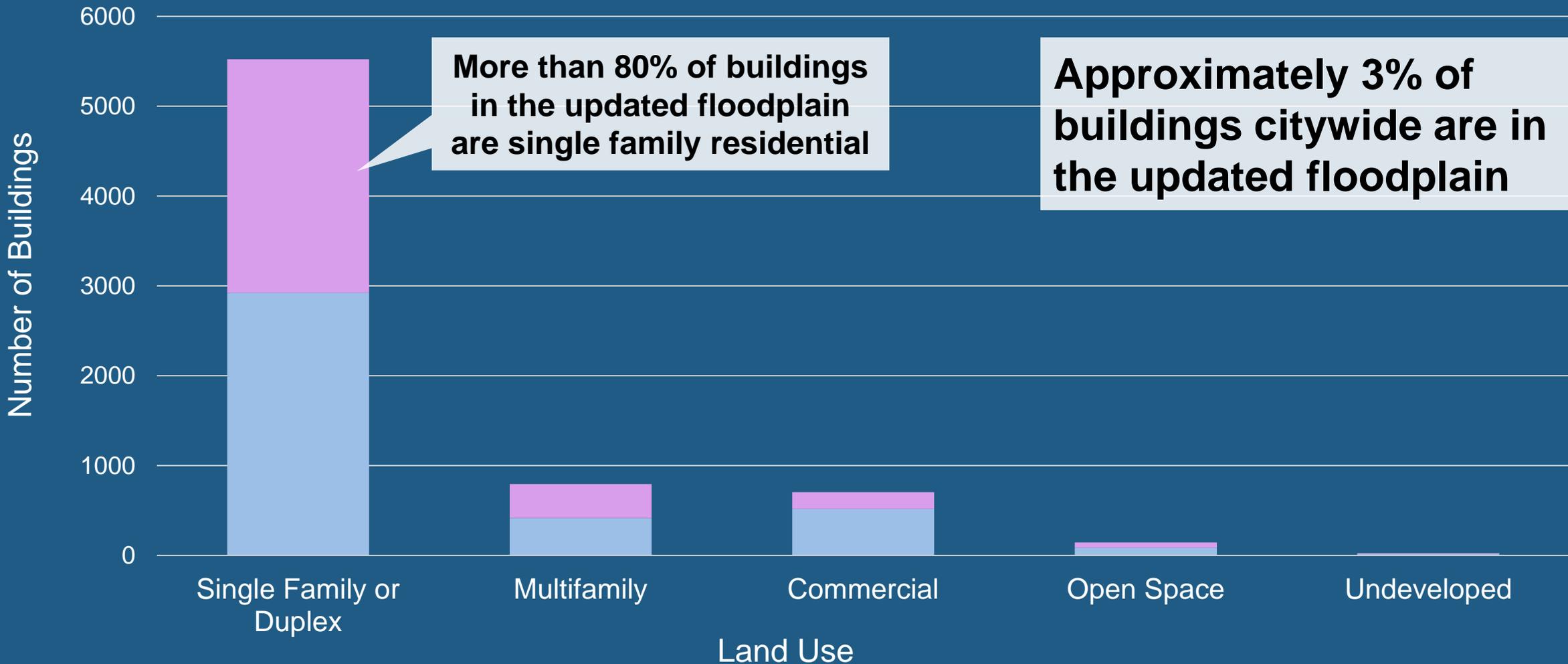
## Flood Risk Mean?

- More buildings in the 100-year floodplain.
- Depth of flooding increases.
- More low water crossings at risk of flooding.
- Depth and velocity of flooding over roadways increase.



# Buildings in the Floodplain

■ Buildings in Current 100 -Year Floodplain    ■ Buildings in Updated 100 - Year Floodplain



More than 80% of buildings in the updated floodplain are single family residential

Approximately 3% of buildings citywide are in the updated floodplain

Overview of  
**Flood Prevention Strategies**

How do we ensure that *new* development minimizes its flood risk and the risk to others?

- Floodplain regulations
- Drainage criteria

Address:  **Locate** OR Property ID:  County:  **Locate** **Clear Selection** **Help**

**Reports**

Address: <input type="text" value="324 HEARTWOOD DR"/>		TaxID: <input type="text" value="0413070410"/>		Date: <input type="text" value="12/22/2014"/>	
FEMA Floodplain		City of Austin Floodplain			
Flood Zone	<input type="text" value="AE"/>	25-year Flood Elevation	<input type="text" value="603.64"/>		
Community Number	<input type="text" value="480624"/>	100-year Flood Elevation	<input type="text" value="606.51"/>		
Panel Number	<input type="text" value="48453C0585H"/>	Flood Study Reference	<input type="text" value="STUDY6"/>		
Effective Date	<input type="text" value="9/26/2008"/>				
Base Flood Elevation	<input type="text" value="606.31"/>				

**Print** **Close**

Select ID Print Report Help Layers

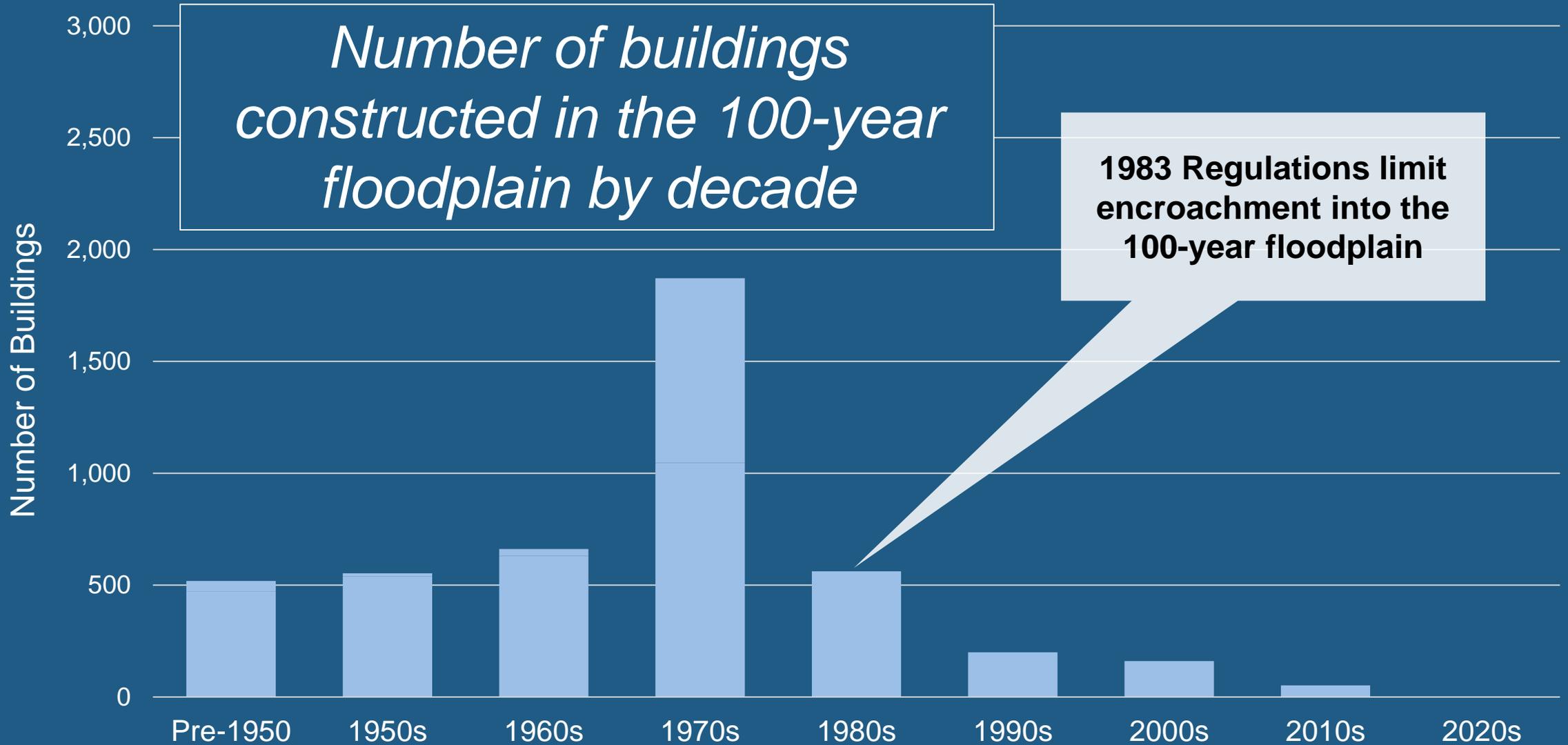
1 Miles

City of Austin

# Floodplain Regulation History

- 1975 – Entered FEMA emergency program; first floodplain maps
- 1983 – Entered full National Flood Insurance Program; updated maps and floodplain regulations
- 2003 – Amended regulations to include administrative variance process





# Recommended Response

## Step 1

Land Development Code amendments

## Step 2

Drainage Criteria Manual revisions

## Step 3

Flood Risk Evaluation





## Step 1

### Land Development Code amendments

- Revise floodplain definitions
- Create a redevelopment exception
- Expand the Colorado River exception
- Increase the freeboard requirement

## Revise floodplain definitions

New 100-yr floodplain → Current 500-yr floodplain

New 25-yr floodplain → Current 100-yr floodplain

- Interim definitions until floodplains are re-mapped in 2 - 3 years
- No change to Colorado River floodplain

Storm Level	Current Rainfall Depth (24 hour storm)	Updated Rainfall Depth (24 hour storm)
100-year (1% chance)		Up to 13+ inches
500-year (0.2% chance)	13.5 inches	

## Revise floodplain definitions

New 100-yr floodplain → Current 500-yr floodplain

New 25-yr floodplain → Current 100-yr floodplain

- Interim definitions until floodplains are re-mapped in 2 - 3 years
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### Purpose

- Limit construction of new buildings in areas with known flood risk during re-mapping process
- Limit creating existing, non-conforming structures

# Flood Risk Reduction Challenge

**7,200 buildings** in the 100-year floodplain  
**53\* buildings** with flood risk reduced each year  
**135+ years** to reduce current risk

How can we increase the pace  
of flood risk reduction?

## Create a redevelopment exception

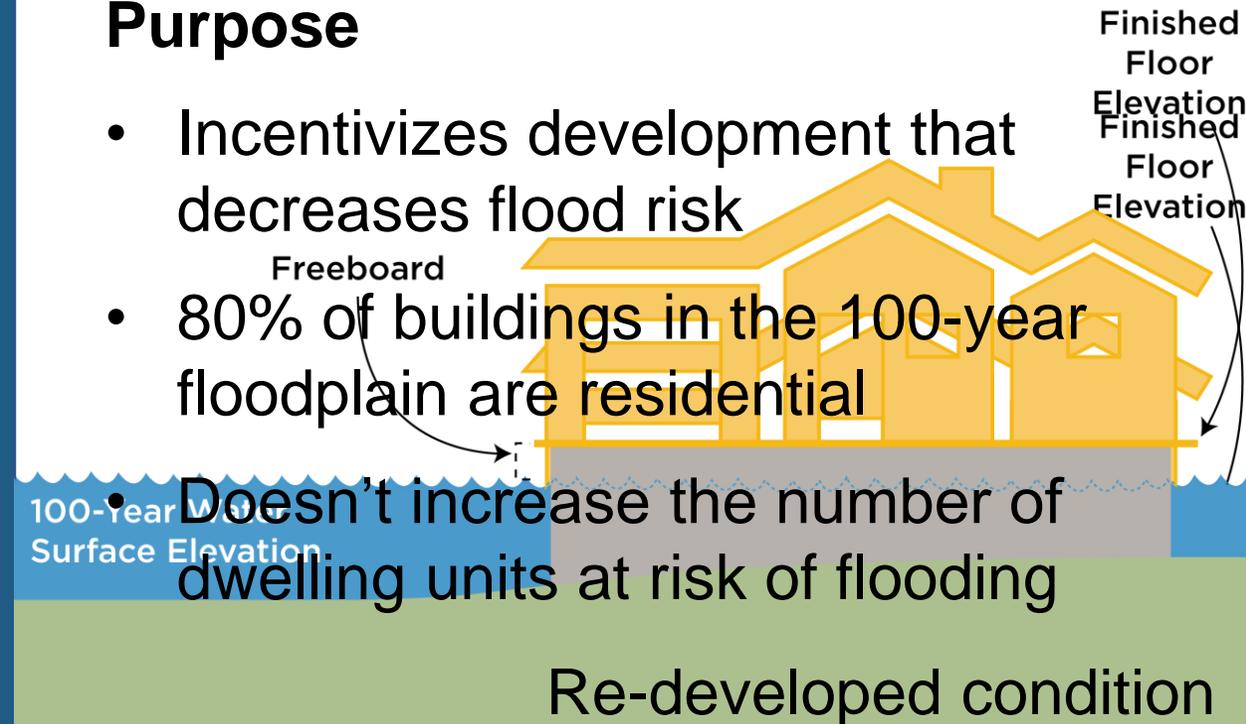
Administrative approval process for a residential building in the floodplain if:

1. Replaces an existing residential building
2. Finished floor elevation is at least 2 feet above the 100-year floodplain
3. Does not increase number of dwelling units
4. No adverse flooding impact

If these 4 conditions are met, the safe access requirement is waived

### Purpose

- Incentivizes development that decreases flood risk
- 80% of buildings in the 100-year floodplain are residential
- Doesn't increase the number of dwelling units at risk of flooding



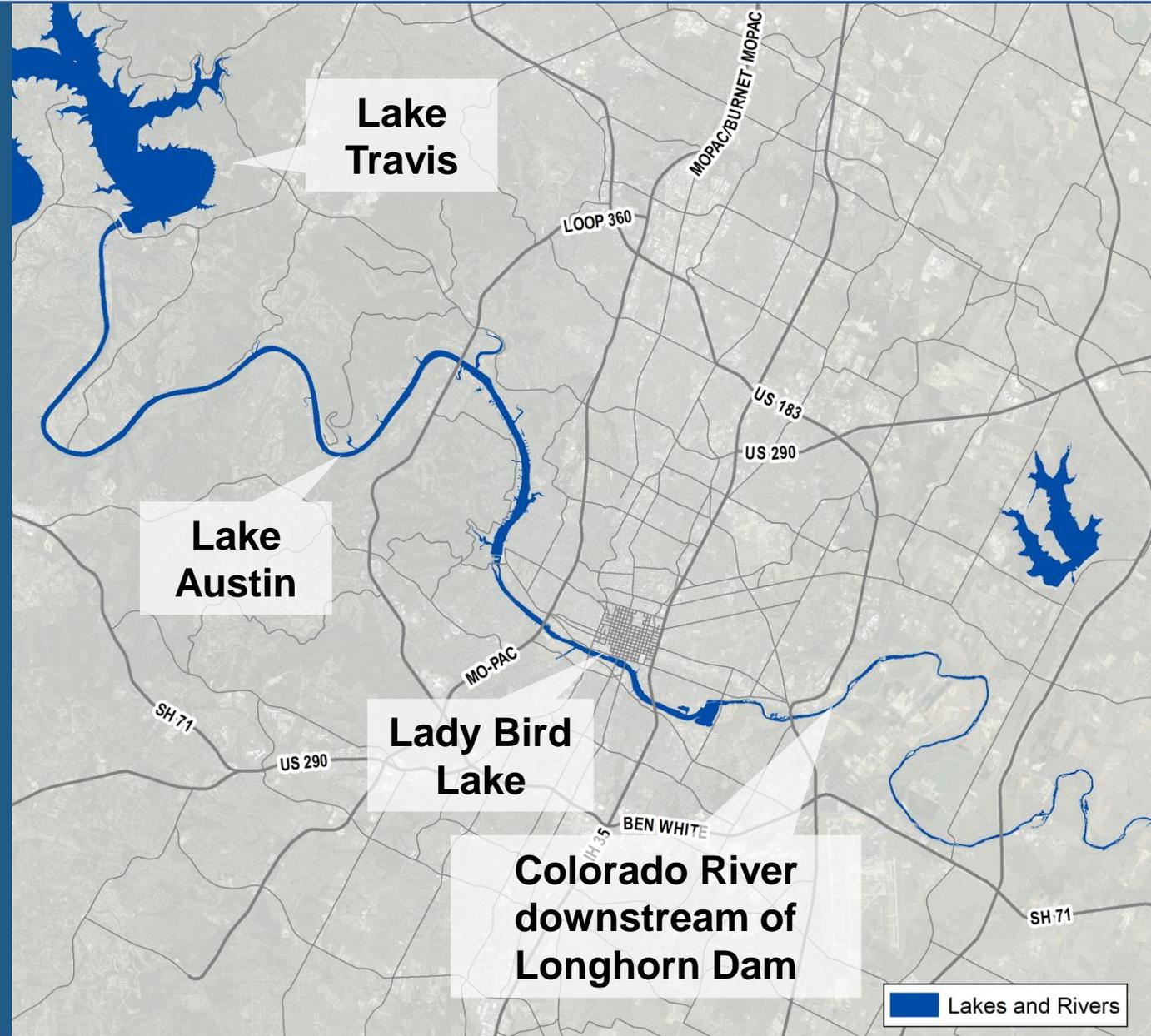
## Expand the Colorado River exception

The existing exception allows for a building to encroach on the 100-year floodplain without safe access if it is:

- Downstream of Longhorn Dam
- Along Lady Bird Lake

WPD recommends expanding this exception to include:

- Lake Austin
- Lake Travis



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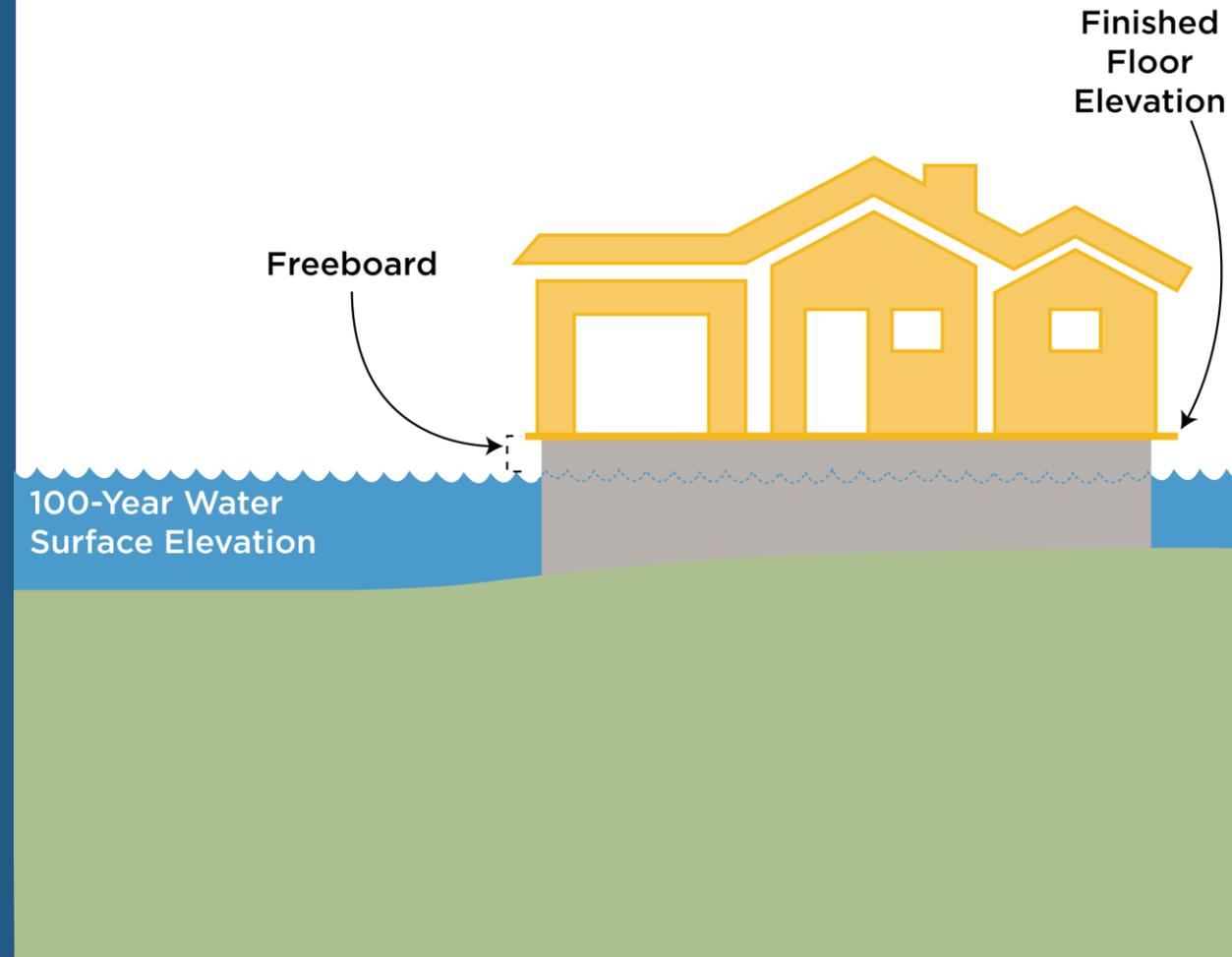
- Provide uniform regulations along Colorado River
- Colorado River flooding is not flash flooding like rest of City

## Increase the freeboard requirement

Increase the minimum height between a building's finished floor and the 100-year floodplain from 1 ft to 2 ft

### Purpose

- Freeboard is the single-most effective means for reducing flood risk to a building in the floodplain
- Reduce flood insurance premiums



## Who Have We Talked To?

Contacted more than 2,500 people at 88 different meetings

Public meetings

24,000 postcards sent to residents in the floodplain

Neighborhood groups

Environmental Community

Professional Associations

Development Organizations

Boards and Commissions

# Who Have We Talked To?

## Internal Departments

- Development Services Department
- Parks and Recreation
- Neighborhood Housing and Community Development
- Corridor Planning Office
- Law
- Public Works Department
- Austin Transportation Department
- Austin Water
- Sustainability
- Office of Real Estate Services
- Equity Office
- Travis County

# What We Heard and How We Responded

Timing gap between code amendments and DCM rules

- Eliminated gap – DCM draft rules are released

Building height limitations with Subchapter F

- Increased allowable building height by 2 feet

Losing some entitlements of approved residential subdivisions

- Safe access compliance determined at time of prelim. plan or plat

Drainage infrastructure challenges for phased developments

- Draft DCM rules establish modified criteria for phased developments

# Building Code Changes

**Part 13** – Subsection 202.1 (Amended Definitions) of City Code Section 25-12-3 (Local Amendments to the Building Code)

**Parts 19, 20, 21, 22** – various sections of City Code Section 25-12-243 (Local Amendments to the International Residential Code)

## Definition consistency for:

25-year floodplain, 100-year floodplain, base flood, design flood, flood hazard area, and floodway

# Building Code Changes

**Part 15** – Subsection 1612.4.1 (Freeboard) of City Code Section 25-12-3 (Local Amendments to the Building Code)

The minimum **freeboard** requirement for buildings in the floodplain is increased from one foot to two feet

# Building Code Changes

**Part 23** – Subsection R322.2.1 (Elevation requirements) of City Code Section 25-12-243 (Local Amendments to the International Residential Code)

The minimum **freeboard** requirement for residential buildings in the floodplain is increased from one foot to two feet

# Building Code Changes

**Part 24** – Subsection R322.2.6 of City Code Section 25-12-3 (Local Amendments to the International Residential Code)

## Means of egress determination

For **single-family condo regime buildings**: Means of egress is determined at the time of site plan approval if the site plan was approved between December 1, 2017 and the effective date of this ordinance

For **single-family buildings**: Means of egress is determined accordingly:

- at the time of preliminary plan if the preliminary plan was submitted for approval between December 1, 2014 and the effective date of this ordinance; or
- at the time of final plat if the final plat was approved between December 1, 2017 and the effective date of this ordinance.

Means of egress for residential buildings for all other situations not described above is **determined at the time of building permit application**.

## Step 2 Drainage Criteria Manual revisions

- Atlas 14 updates rainfall rates that are used to determine:
  - Floodplain location
  - Size of storm drain pipes, inlets, and ditches
  - Detention pond size
- Rules making process
  - Draft DCM released in August
  - Stakeholder input





## Step 3 Flood Risk Evaluation

Update floodplain studies citywide

- Process to take 2 - 3 years
- Once complete, will provide data to FEMA to update flood insurance maps

Evaluate impacts to existing infrastructure

- Floodwalls
- Channels

## Timeline

### Step 1 – LDC

Public Hearings

**September 2019** – Boards and Commissions

**October 2019** – proposed City Council meeting

### Step 2 – DCM

**August 2019** – Released draft rules

**October 2019 thru January 2020** – Rules change process that includes stakeholder input

### Step 3 – Evaluation

**2019 to 2021** – Re-mapping of Austin floodplains and infrastructure evaluation

**2022** – FEMA map updates

An aerial photograph showing a residential neighborhood in Austin, Texas, that has been severely flooded. The houses and trees are partially submerged in muddy brown water. In the foreground, a river flows rapidly over a rocky bed, creating white foam. The text "ATLAS 14: AUSTIN'S NEW UNDERSTANDING OF FLOOD RISK" is overlaid in large, bold, yellow letters, framed by white brackets on the left and right sides.

**ATLAS 14: AUSTIN'S NEW  
UNDERSTANDING OF  
FLOOD RISK**