

Tornado

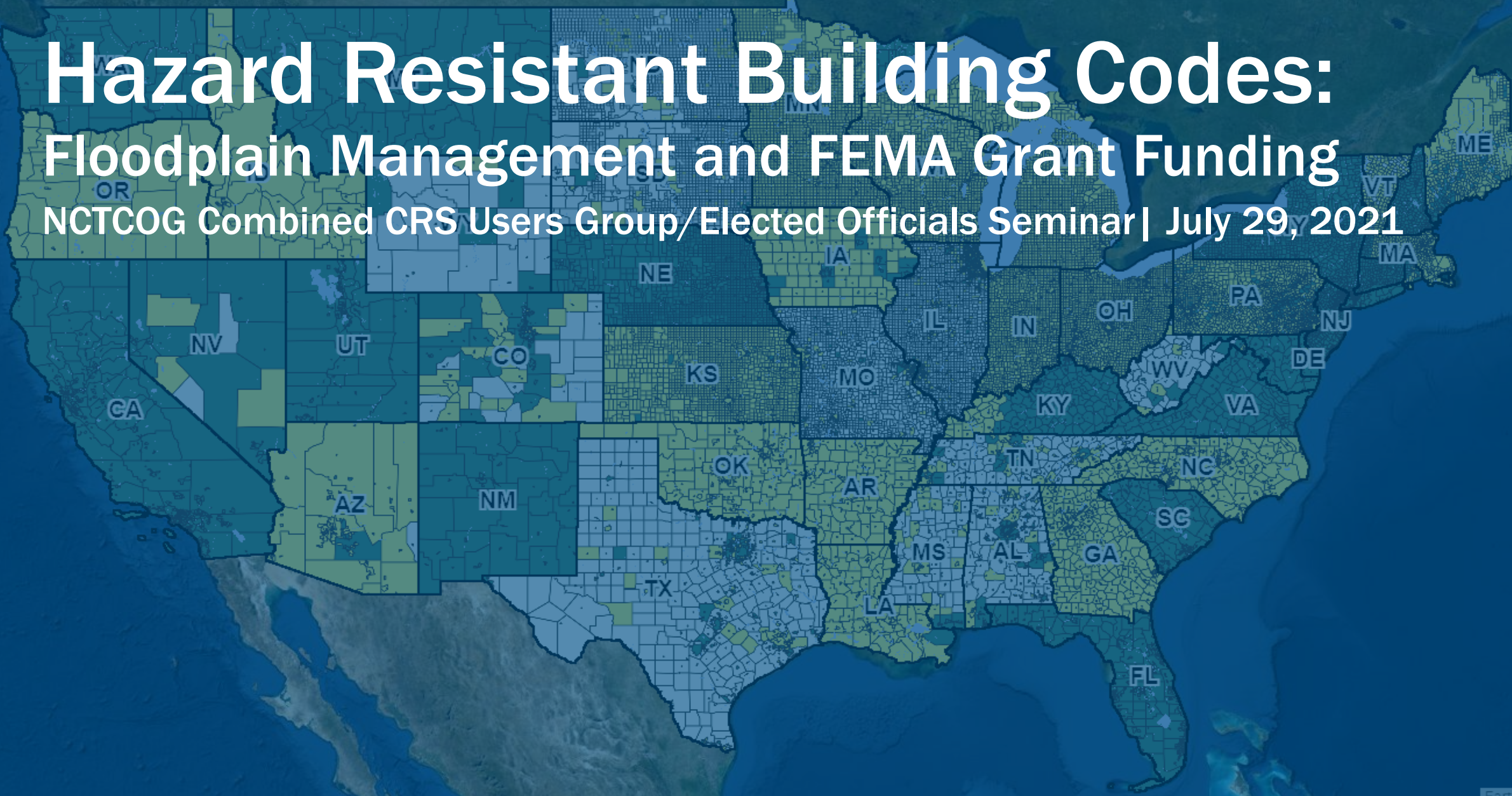
Damaging Wind

Mutual Aid

Find address or place

# Hazard Resistant Building Codes: Floodplain Management and FEMA Grant Funding

NCTCOG Combined CRS Users Group/Elected Officials Seminar | July 29, 2021



# Building Science Branch Presenters and HQ Support

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# Overview and Goals

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- Provide a basic understanding of hazard-resistant building codes, focusing on flood provisions and grant opportunities
- Encourage communities to:
  - **Adopt the latest published editions of hazard-resistant building codes**
    - Currently deemed 2015 and later International Codes
  - **Review and update adopted building codes on a regular schedule**
    - Soon we will be rating the States code adoption using the 2018 and later editions of the I-Codes
  - **Identify and utilize resources to achieve hazard-resistant code adoption and enforcement**
  - **Identify grant opportunities from multiple sources related to hazard-resistant codes**





# Hazard Resistance in Building Codes



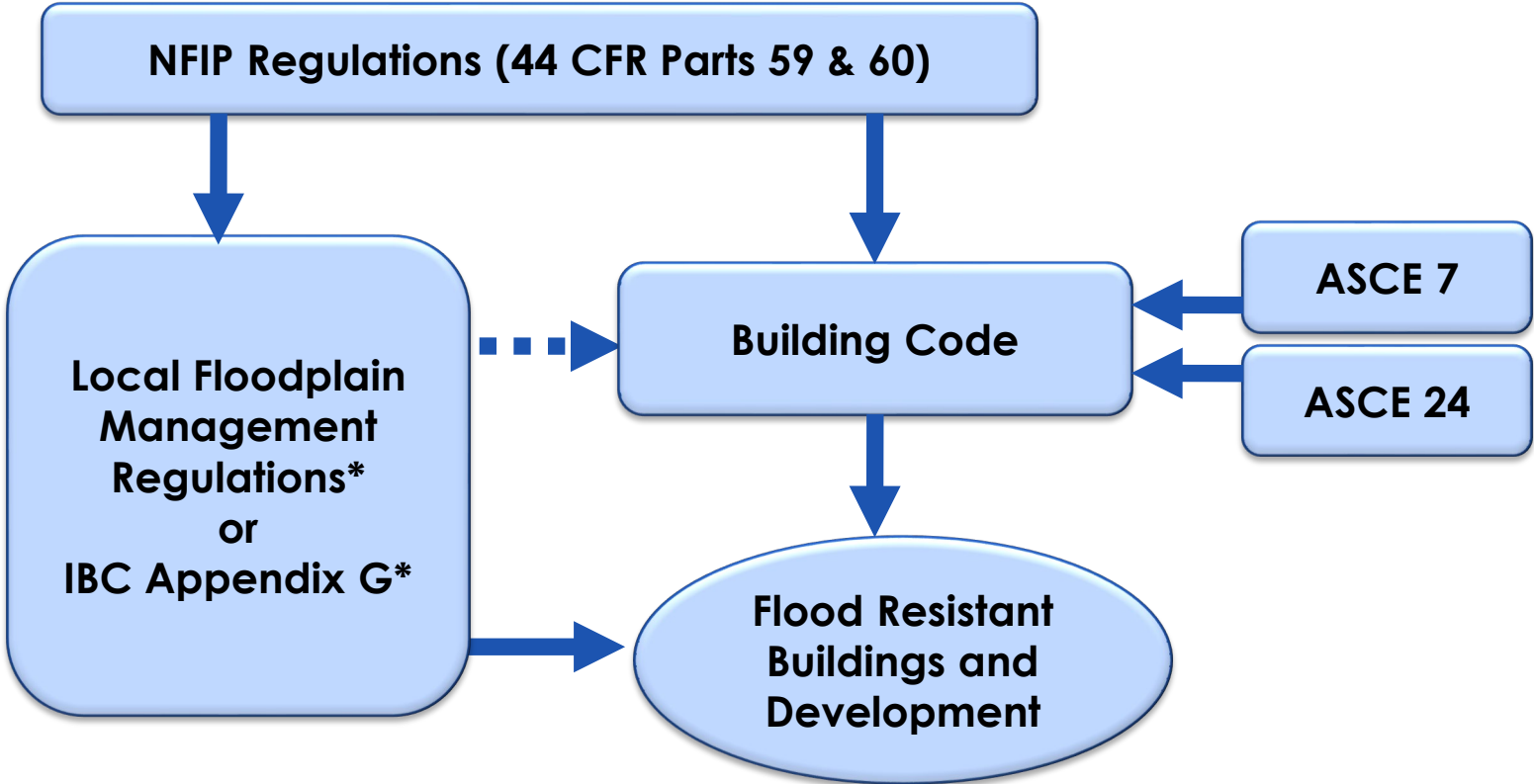
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## Rockport, Texas after Hurricane Harvey

Photo courtesy of the 2017 FEMA Hurricane Harvey Mitigation Assessment Team (MAT)

Federal Emergency Management Agency

# Relationship Between I-Codes and NFIP



\* NFIP-consistent administrative provisions, community-specific adoption of FIS and maps, and technical requirements for development outside the scope of the building code (and higher standards, in some communities).



# Hazard Resistance in Building Codes in Texas

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Hazard-resistant code: 2015 or later IBC and IRC without weakening hazard provisions

**Now: 2003  
IBC/2000  
IRC**

- References ASCE 24-98
- No freeboard

**Jan. 2022:  
2012  
IBC/IRC**

- References ASCE 24-05
- Limited freeboard
- Explicit flood damage-resistant materials requirement
- Final elevation inspection
- Floodway analysis

**Goal:  
2021  
IBC/IRC**

- References ASCE 24-14
- Consistent freeboard 1 ft +
- Emergency power for critical facilities
- More specific SI/SD administration



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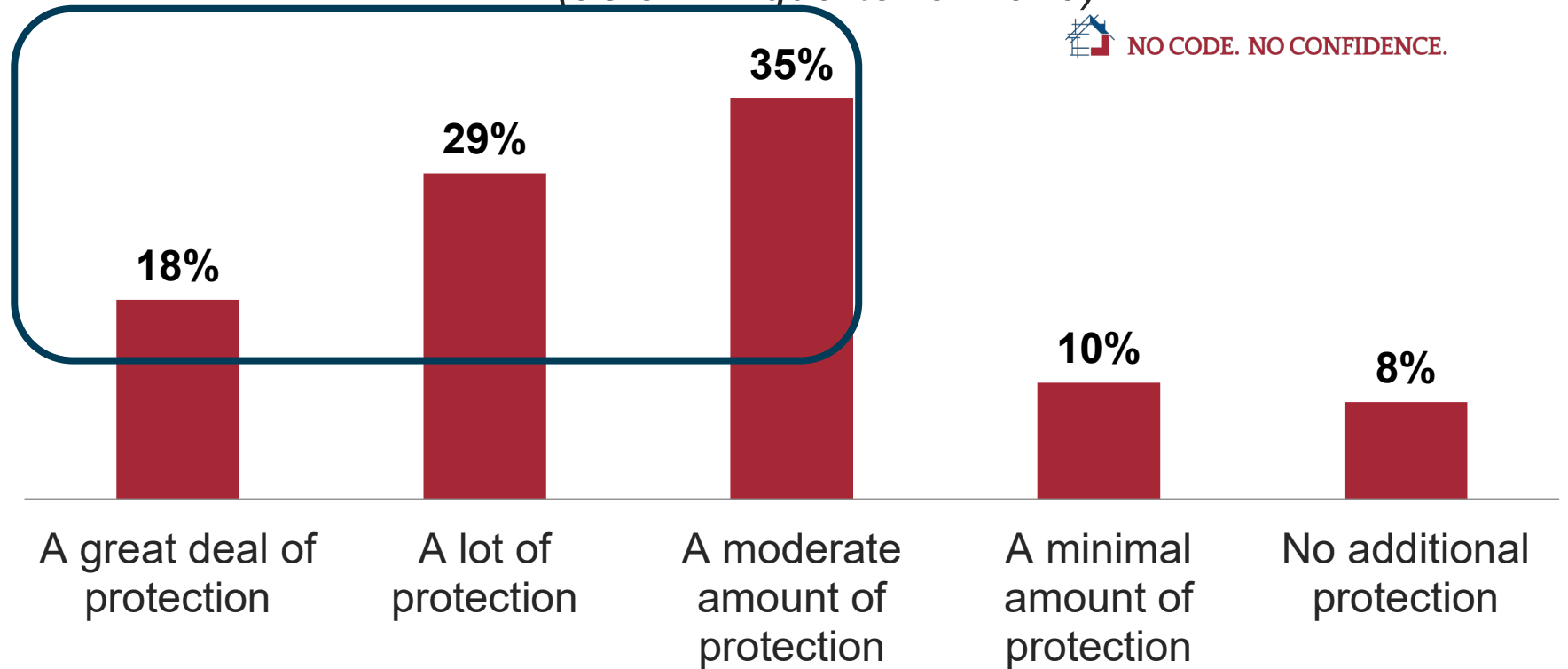
# People's Assumptions of Protection

**8 out of 10**

Americans assume they are at least moderately protected.

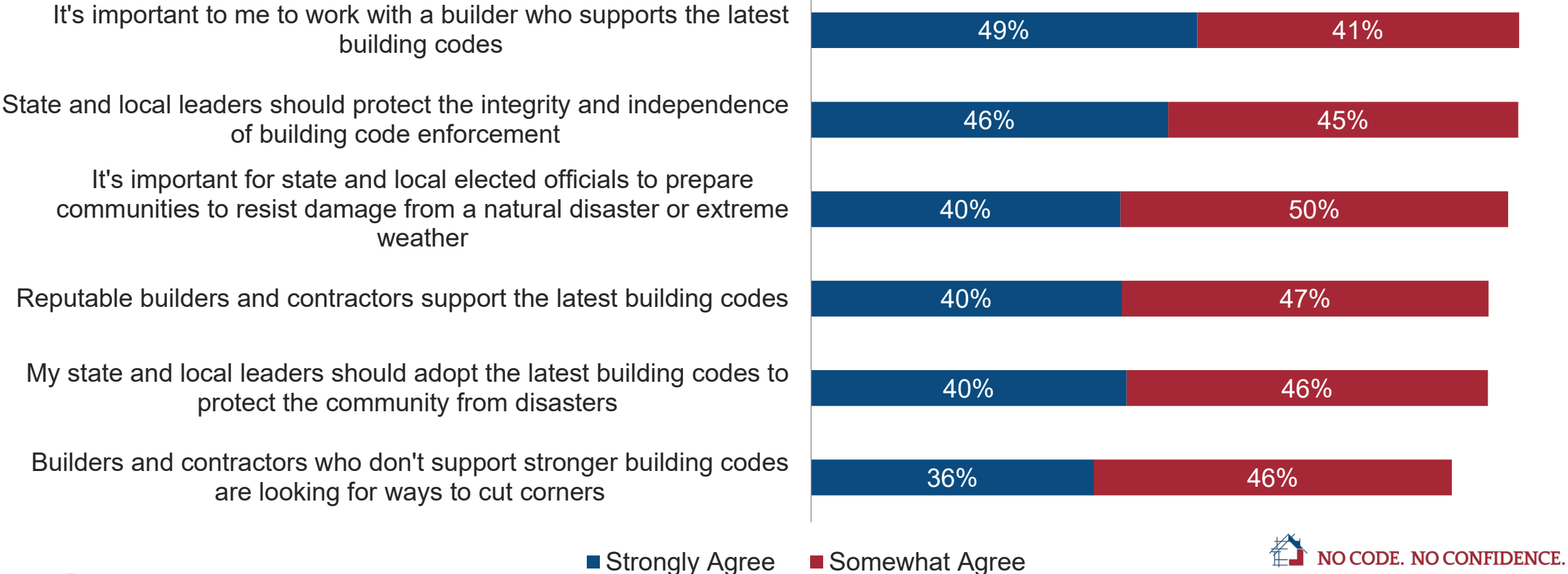
<http://newsroom.flash.org/commentary/why-americans-arent-concerned-about-building-codes-even-though-they-should-be.htm>

*Assumed Protection with Building Codes  
(as of 2<sup>nd</sup> quarter of 2019)*



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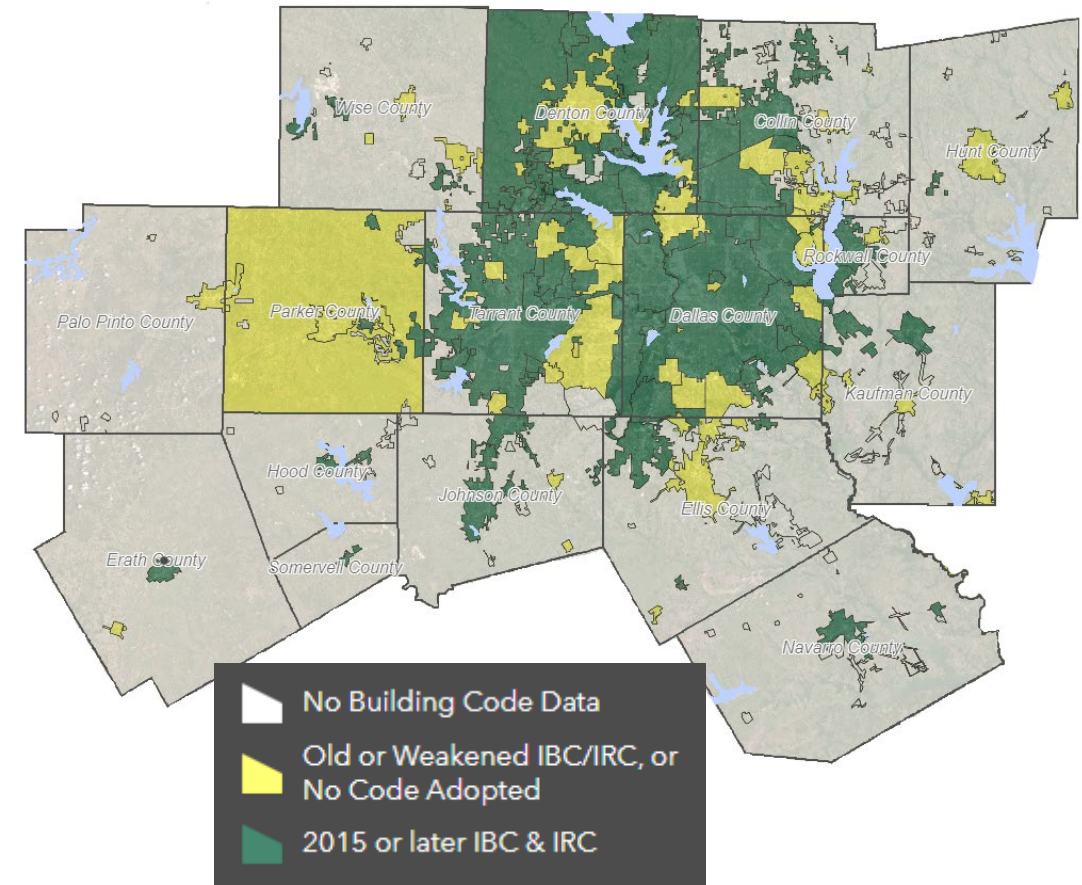
# People Have High Expectations





# Building Code Adoption Status: NCTCOG Jurisdictions

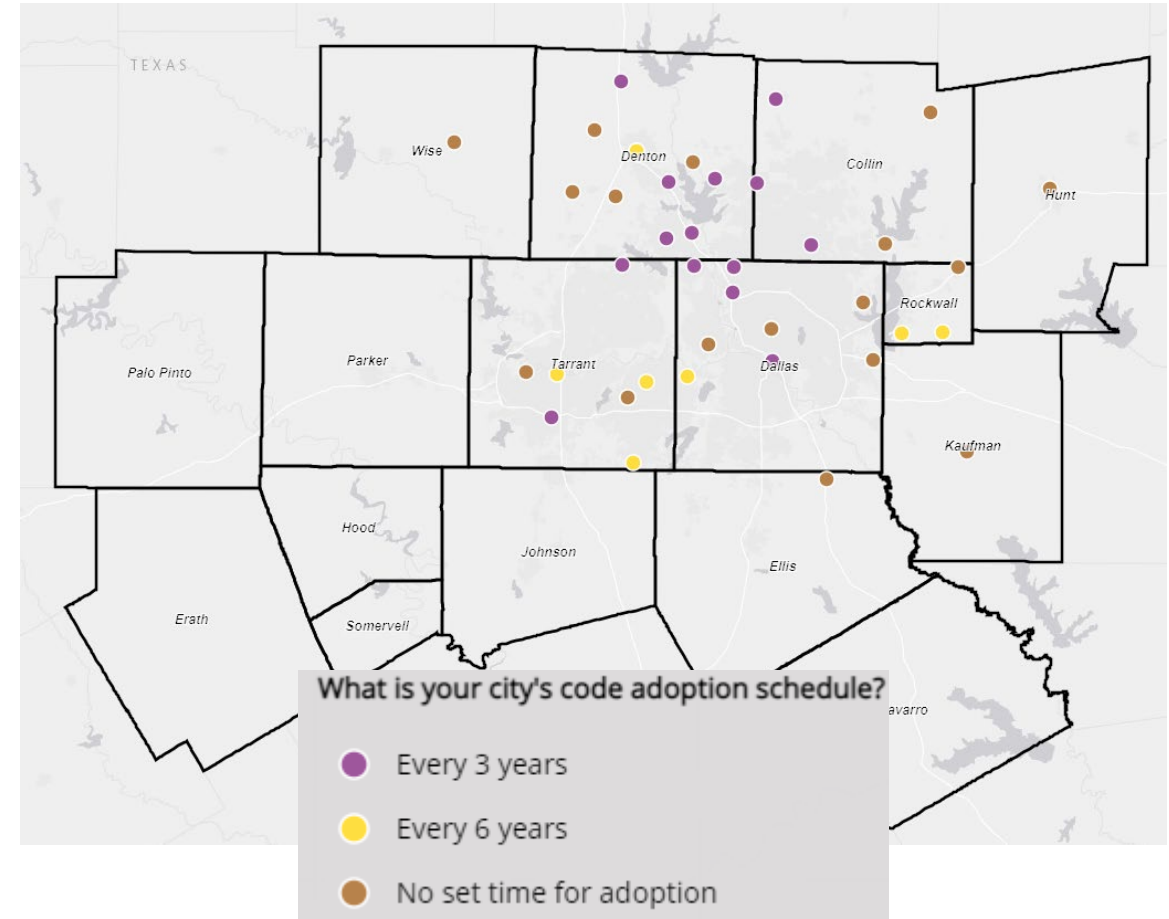
- 60% of NCTCOG jurisdictions are hazard-resistant
- FEMA BCAT Portal:  
<https://www.fema.gov/emergency-managers/risk-management/building-science/bcat>
  - Help us fill the map! Email [FEMA-BuildingScienceHelp@fema.dhs.gov](mailto:FEMA-BuildingScienceHelp@fema.dhs.gov) with code status if missing



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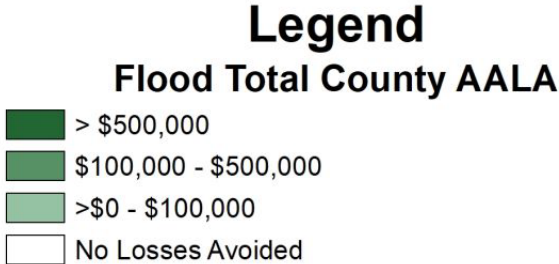
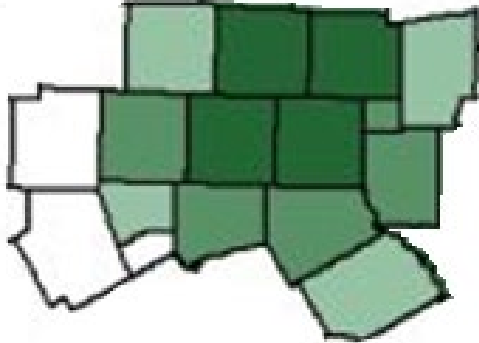
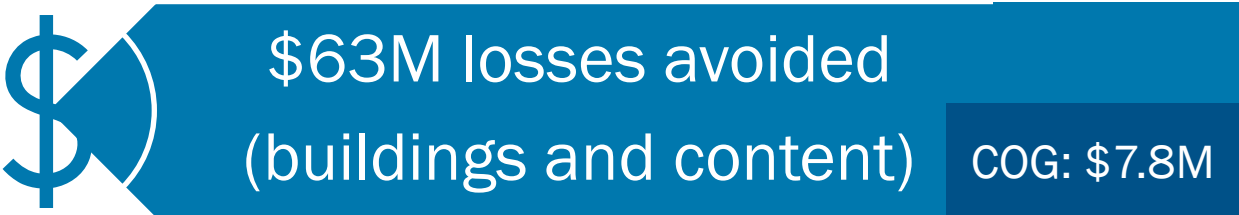
# Building Code Adoption Status: NCTCOG Jurisdictions

- NCTCOG Code Adoption Surveys:  
<https://www.nctcog.org/envir/regional-building-codes/code-adoption-surveys>
  - Adopted code editions?
  - Code adoption schedule?
  - Plans for adopting 2018 codes?
  - Use of NCTCOG amendments?



# Freeboard: Losses Avoided in TX

*Building Codes Save: A Nationwide Study* (FEMA, 2020)



Source: FEMA *Building Codes Save*  
<https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes-save-study>

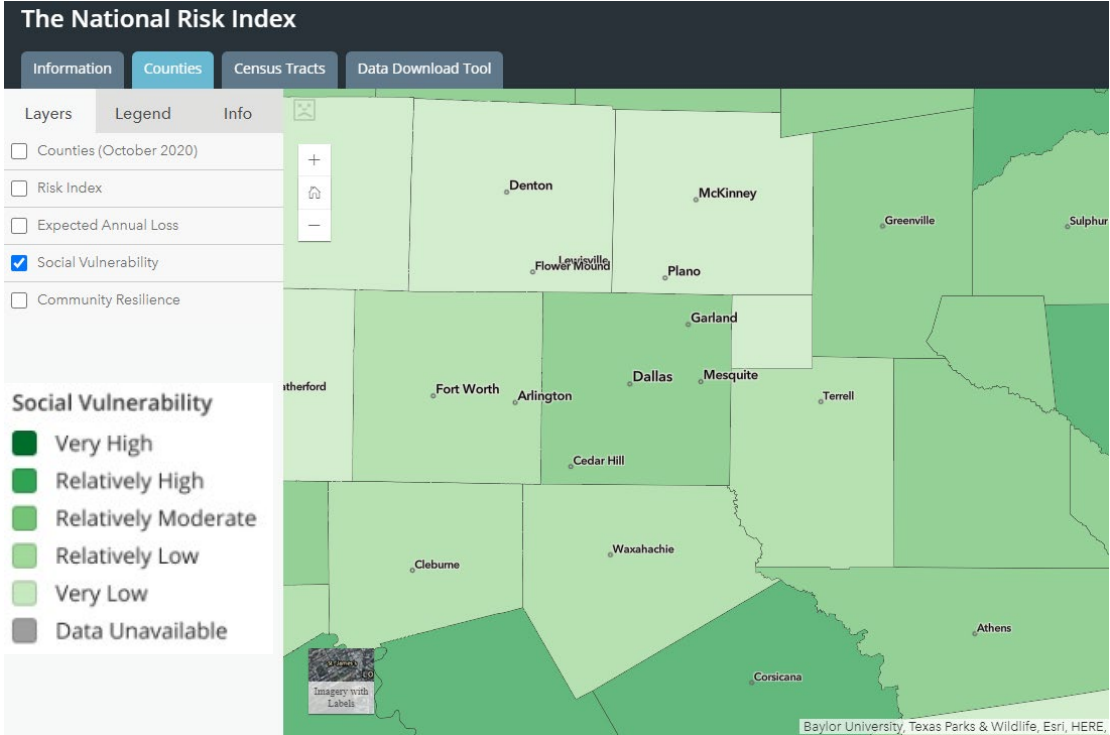


# National Risk Index: NCTCOG Counties

NCTCOG Exposure to Riverine Flooding		
	Pop. at Risk Without Recent Codes*	Expected Annual Loss to Buildings (EALB)
All Communities	181,827 (67%)	\$7,429,636
Socially Vulnerable Communities**	64,584 (28%)	\$4,298,834

\*2015 IBC and IRC or later editions

\*\*Includes Relatively Moderate, Relatively High, Very High Vulnerability



<https://hazards.geoplatform.gov/portal/apps/MapSeries/index.html?appid=ddf915a24fb24dc8863eed96bc3345f8>





# Savings Outweigh the Costs

- **Opportunities for More Savings:** *Building Codes Save* identified Priority High Hazard, Higher Growth Counties with Limited I-Code Use

County		Wise	Hunt	Parker	Rockwall	Hood	Johnson	Ellis	Kaufman
New post-2000 bldgs.	Total	10,591	10,013	20,075	17,747	8,245	19,027	24,136	20,138
	In SFHA	140	103	290	219	130	269	327	166

- 1 foot of freeboard only adds ~1.5% to construction costs\*
- Adopting the latest building codes saves \$11 per \$1 invested\*
- Indirect losses slow recovery: business interruptions, lost personal income, outsized debt, homelessness, lost municipal tax receipts
- Communities can work together to share costs and resources for code enforcement

\* <https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report>



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# Building Code Effectiveness Grading Schedule (BCEGS®)

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- BCEGS score 1 (best) to 10 based on code administration, plan review, and field inspection
- **Stronger codes = more hazard resilience = better score = lower rates/premiums**
- Competitive BRIC: 15 Technical Points awarded to subapplicants with BCEGS score of 1 to 5 (out of 10)
- CRS class prerequisites based on BCEGS score
- 138 jurisdictions within NCTCOG participate in BCEGS (and have a BCEGS score), does not include the 16 counties
- **No BCEGS score?:** Contact ISO to begin the scoring process, typically a 2-4 month process at no cost to the community (other than personnel time)
- Visit: <https://www.isomitigation.com/bcegs/>

# Advantages of Building Codes

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- Administration and enforcement
- Consistent permitting and inspections
- Flood provisions that are more specific or more resilient than NFIP go into effect automatically (such as Substantial Improvement/Substantial Damage administration; freeboard)
- Competitive edge in FEMA grant funding
- Community Rating System (CRS):
  - Class 8 prerequisite: 1 foot of freeboard for residential buildings
  - Class 6 prerequisite: BCEGS score of 5/5 or better
  - Class 4 prerequisite: BCEGS score of 4/4 or better
  - Credits for Activity 430 “higher regulatory standards” meaning stronger standards and more resilient



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# More Specific and Resilient Standards in Codes

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- Specific design requirements for foundations, geotechnical characteristics, flood loads
- High risk flood hazard areas (alluvial fans, flash flooding, mudslides, ice jams, high velocity flow, high velocity wave action, Coastal A Zone, erosion)
- Freeboard as function of Flood Design Class
- Dry floodproofing specifications
- Flood opening specifications
- Elevators, pools, parking structures, accessory structures
- Two elevation inspections (after foundation prior to further vertical construction; final inspection)
- Substantial Improvement/Substantial Damage determinations
- <https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes/flood>



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# What's Next: Building Codes Strategy

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FEMA is developing an Agency Strategy to advance disaster-resistant building codes at the State and local level as a starting point for a coordinated effort involving Other Federal Agencies to achieve a resilient Nation with superior building performance in disasters.



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# FY2020 BRIC Grants Award Summary

- Building Code Activities
  - 15 selected
  - \$2.2 million federal share
  - 2 in Texas
- All 400+ projects (\$500 million federal share) selected under **national competition** came from states with statewide code mandate of either the 2015 or 2018 IBC and IRC
- Want to apply for BRIC? contact Josh Davies (TDEM) at (512) 462-6142 or [TDEM-Mitigation@tdem.texas.gov](mailto:TDEM-Mitigation@tdem.texas.gov)



<https://tdem.texas.gov/building-resilient-infrastructure-and-communities-2021/>



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# BRIC Building Code Activities

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**Evaluate** adoption and/or implementation of codes that reduce risk that are best suited to the community



**Enhance** existing adopted codes to incorporate more current requirements or higher standards that increase resilience



**Develop** professional workforce capabilities through technical assistance and training

Learn more: [https://www.fema.gov/sites/default/files/2020-08/fema\\_bric-and-building-codes\\_support\\_document\\_August\\_2020.pdf](https://www.fema.gov/sites/default/files/2020-08/fema_bric-and-building-codes_support_document_August_2020.pdf)



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# FEMA Grants Require Latest Codes

- DRRA 1235b requires incorporation of latest published hazard-resistant codes, standards, and specifications into Public Assistance project design and construction
- HMA guidance requires the latest hazard-resistant codes in flood projects
- HMA guidance requires FEMA P-361 for safe rooms, based on ICC 500, the standard for storm shelter design and construction
- Regardless of community code adoption status



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# DRRA 1206 Post-Disaster Resources

*FEMA Policy FP 204-079-01 Building Code and Floodplain Management Administration and Enforcement*



**Building Code Administration** (review and process building applications; collect fees; hire, train, supervise staff; etc.)



**Code Enforcement** (inspect structures; review elevation certificates; conduct and process condemnation determinations; etc.)



**Floodplain Management Regulation, Administration, and Enforcement** (hire, train, supervise extra staff; provide training; process permits; etc.)



**Substantial Damage Operations** (conduct field surveys; prepare cost information; perform inspections; etc.)

## FEMA Policy Requirements:

- Designated area of the major disaster declaration
- Performed within **180 days after the disaster**
- Relate to the **repair, replacement or retrofit of disaster-damaged structures**
- Funded at the **permanent work cost share** applicable to the event

<https://www.fema.gov/media-collection/section-1206-building-code-and-floodplain-management-administration-and>



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# Mutual Aid Response

- Mutual Aid teams can be funded through DRRRA 1206 to assist with post-disaster building tasks
- Texas Statewide Mutual Aid System allows political subdivisions to provide mutual aid
- Texas DEM can employ and pay disaster reservists with specialized skills
- Build relationships with community Public Assistance (PA) personnel who work directly with FEMA
- Mutual Aid for Building Department Fact Sheets and Mutual Aid Legislation Portal (<https://www.fema.gov/emergency-managers/risk-management/building-science/bcat>)



Mutual Aid agreements enable jurisdictions to share personnel and resources during emergencies. Code-related activities include building safety evaluations, post-disaster code enforcement and administration, as well as floodplain administration.



Building Officials Association of TX



**AIA**

- Houston
- Dallas
- Austin



TX Floodplain Management Association



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# HUD Community Development Block Grants

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The Texas General Land Office (GLO) works to rebuild Texas communities by putting Texans back in their homes, restoring critical infrastructure and mitigating future damage through resilient community planning.

- GLO is the lead agency for administering over \$14 billion in HUD Community Development Block Grant Disaster Recovery (CDBG-DR) funds
- Eligible activities include: acquisition, relocation, rehabilitation, construction of public facilities, public services, energy conservation/renewables, economic development
- Activities primarily benefit low- and moderate-income persons
- <https://recovery.texas.gov/>
- [https://www.hud.gov/program\\_offices/comm\\_planning/cdbg](https://www.hud.gov/program_offices/comm_planning/cdbg)



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# What's Next for NFIP

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- Upcoming Risk Rating 2.0: Equity in Action
  - Deliver actuarially sound rates & new pricing methodology using multiple flood variables
  - <https://www.fema.gov/flood-insurance/risk-rating>
- Issued FEMA RFI on FEMA Programs to further advance equity, climate change resilience, and environmental justice
  - <https://www.federalregister.gov/documents/2021/04/22/2021-08444/request-for-information-on-fema-programs-regulations-and-policies>
- Upcoming RFI in response to ASFPM/NRDC petition to reform NFIP building performance requirements
  - expected in September



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# How Do We Adopt a Code?

<https://youtu.be/fZRmdKYDFJU>

Add the code adoption item to City Council (workshop) agenda for discussion

Place an item on the City Council regular agenda for adoption of each code or as a group of codes

Prepare packets for the City Council meeting

Present your codes or code amendment items to the City Council, answer any questions they may have and get your code or code amendment items passed

Congratulations! You have now adopted new building codes or building codes amendments for your city!

NCTCOG Regional Codes Coordinating Committee Resources:

<https://www.nctcog.org/envir/regional-building-codes>



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# Key Takeaways; Remember to Advocate Adoption of Updated Codes

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- Adopt the latest published editions of hazard-resistant building codes that provide the greatest level of hazard resilience for your community (October 2021; FEMA BCAT will move to 2018 and later editions of the I-Codes)
- Maintaining the latest codes is an ongoing process as codes continue to improve hazard resilience. Review and update codes on a regular basis, and the closer we update to the two most recent code editions (Approx. every 6 years) will increase your grant opportunities both in preferred status, i.e., BCEGS rating, including CRS rating (or lower insurance dollars)
- Adopting the latest published editions of the 2021 codes:
  - Protects people, property, and communities from natural hazards
  - Reduces disaster losses and saves money
  - Gives a competitive advantage in grant funding



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## Key Takeaways; What are your resources?

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- Continue to monitor FEMA's BCAT Portal, Partner code tracking websites; including the NTC-cog Portals and surveys to demonstrate to your community and neighboring communities to consider adopting the 2018 I-Codes as a minimum standard
- Work on improving your communities BCEGS rating which in turn improves your communities CRS rating, which in turn saves your residents with lower insurance premiums
- Contact Region VI, Texas Department of Emergency Management, or the Texas General Land Office and apply for Building Code funding through the Disaster Recovery Reform Act of 2018, specifically "Building Resilient Infrastructure and Communities" BRIC, both in Disaster related or Non-Disaster related building code funding opportunities



# Available Tools and Emerging Policies

Nationwide Building Code Adoption Tracking (<https://www.fema.gov/emergency-managers/risk-management/building-science/bcat>)

[www.Inspect2Protect.org](http://www.Inspect2Protect.org)

DRRA 1206 authorizes FEMA to provide SLTTs with resources to administer and enforce adopted building codes and floodplain ordinances

DRRA 1234 authorizes capability and capacity building activities as allocation/set-aside

- BRIC competitive program rewards states with statewide code mandate of either the 2015 or 2018 IBC and IRC, soon to be 2018 to 2021 I-Codes
- HMA and PA Grants (DRRA 1235b) require adherence to latest codes for flood projects



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# Additional Resources

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- <https://www.nctcog.org/home>
- <https://www.fema.gov/about/organization/region-6>
- <https://www.fema.gov/emergency-managers/risk-management/building-science>
- <https://www.fema.gov/emergency-managers/risk-management/building-science/building-codes-save-study>
- <https://www.fema.gov/grants>
- <https://www.iccsafe.org/texas/>
- <https://agrilife.org/resilienttexas/>
  
- Sign up for FEMA email updates: <https://public.govdelivery.com/accounts/USDHSFEMA/subscriber/new>



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# Questions?



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Helping people before, during, and after disasters.