

Developed by the PrepTalk partner organizations, PrepTalk Discussion Guides provide emergency managers with an easy-to-use outline of considerations and resources for each topic. Paired with the videos, these Discussion Guides can be used at meetings, workshops, and conferences to support meaningful dialogue with community leaders and the public to improve preparedness and to build resilience.

Stuart Tom – Using Codes and Standards to Build Resilient Communities

Stuart Tom is a member of the Board of the International Code Council (ICC) and formerly the fire marshal of the City of Glendale, California. He has also served as a member of the Los Angeles Uniform Code Program Steering Committee, and as co-chair of the State Fire Marshal’s Wildfire Ignition ad-hoc committee.

In his PrepTalk: Mr. Tom provides an overview of the importance of building codes and how codes and standards are developed; he explains that model codes and standards are adopted and enforced by jurisdictions; and he shares how the community can get involved.

Well-Constructed Buildings:

- *Suffer less damage during adverse events;*
- *Are more likely to remain usable;*
- *Result in less displacement, homelessness, and disruption of business; and*
- *Save lives.*

-- Stuart Tom

Partners for the Discussion

As risk exposure in our communities increases, understanding how building codes and standards are developed, adopted, and enforced is the first step in making the buildings in your jurisdiction more resilient to the hazards they face. We suggest bringing together emergency management partners involved in managing and enforcing local building codes and standards, such as fire marshals, building officials, and elected leadership, as well as organizations involved in construction in your community, to watch this PrepTalk and discuss ways to create more resilient structures.

Discussion Prompts

Topic 1: The Value of Building Codes and the Process for Continuous Improvement

Mr. Tom begins his PrepTalk by describing how we manage risks in our everyday lives. For example, because highways are dangerous, our communities invest in keeping us safe by requiring seatbelts, helmet laws, and vehicle safety inspections. Similarly, building codes ensure that we build in ways that keep us as safe as possible when faced with hazards such as earthquakes, fires, and hurricanes.



Strong building codes and standards make a visible difference in disaster outcomes. Mr. Tom explains how deaths and injuries in the 1903 Iroquois Theatre Fire in Chicago were tragically high because there were no codes to prevent excess building occupation, inward-swinging exit doors, and a faulty fire curtain, among other contributing factors.

In 2010, the [Haiti earthquake](#), measuring 7.0 on the Richter scale, killed at least 160,000 and possibly more than 300,000 Haitians, partially because no official building codes were in place in Haiti. In 1989, the 6.9 magnitude Loma Prieta Earthquake hit, which resulted in 63 deaths. In 1994, a magnitude 6.7 earthquake hit [Northridge, California](#), and caused an estimated 57 fatalities. In 1994, California was using the Uniform Building Code, which had been updated three years prior in 1991, and was in the process of being revised again in 1994. The significantly fewer fatalities that occurred in the California earthquakes demonstrates the value of strong building codes.

Location	Haiti, DR	Loma Prieta, CA	Northridge, CA
Date	January 12, 2010	October 17, 1989	January 17, 1994
Magnitude	7.0	6.9	6.7
Codes	No	Yes	Yes
Deaths	160,000	63	57

The ICC is a standards organization that produces a [series of international codes](#), or I-Codes, including:

- **International Building Code (IBC)** Applies to almost all types of new buildings.
- **International Residential Code (IRC)** Applies to new one- and two-family dwellings and townhouses of not more than three stories in height.
- **International Existing Building Code (IEBC)** Applies to the alteration, repair, addition, or change in occupancy of existing structures.

These model building codes specify the minimum legal requirements to adequately safeguard the health, safety, and welfare of building occupants.

The ICC publishes updated model codes every three years, which are developed using a consensus-based process.

- Changes to a prior edition may be proposed by any interested party.
- A panel of industry experts discusses the proposed changes in an open forum and votes on an initial outcome.
- Any interested party may submit a public comment to express their opinion.
- Final votes are cast by governmental members with no financial interest in any proposal.
- Results are compiled and constitute the next edition of the code.

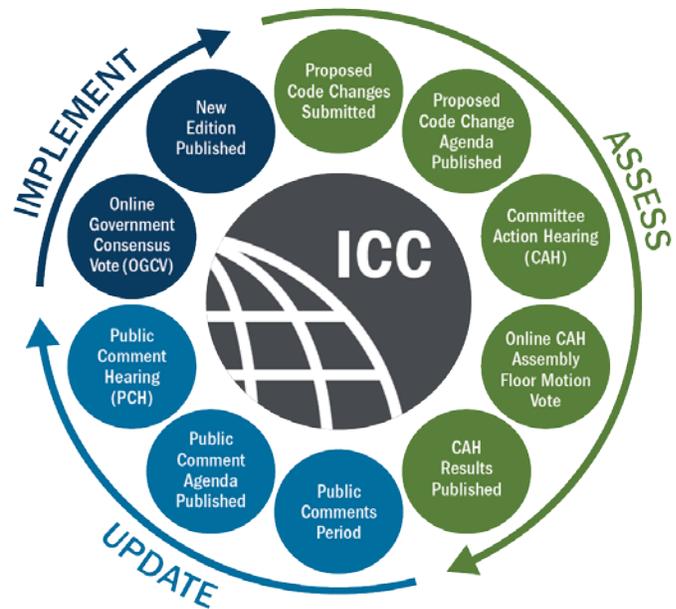


Figure 1: ICC Code Development Process Source: <https://www.iccsafe.org/products-and-services/i-codes/code-development/>

Analyzing building performance in disasters provides crucial information to improve the next iteration of building codes. Data from earthquakes, floods, and high wind events provides engineers and architects with critical information to improve construction practices to minimize the impact from disasters.

Since emergency managers are well versed in local risks and common causes of building damage in emergencies, they are well positioned to provide valuable feedback to the ICC. Anyone can provide comments to any ICC code through the [ICC Code Development Process website](#). Beyond that, emergency managers can get involved in [committees and councils](#) tasked with reviewing and updating codes.

“There are opportunities for all of us to be involved in code development and when we learn things from disasters, we can make the next generation of codes even that much better.”

-- Stuart Tom

Take Action

- Does your community have examples of building damage that was exacerbated because a structure was built to an outdated code, or examples of how building codes and standards reduced damage?
- Who in your community monitors the ICC three-year cycle for International Building Code updates (the Building Department? Fire Department? Etc.)? Has anyone in your community proposed changes to a code or provided comments on proposed codes?
- After a disaster in your community, do you have a process to examine the damage and submit findings to the ICC? Are there particular hazards that impact your community that would be especially helpful in code development and improvement?

Topic 2: State and Local Adoption and Enforcement

Code Adoption

Codes developed by the ICC are reviewed and updated every three years. Once new codes are published, states have differing processes of adopting the codes. Some states, like California and Florida, amend the code to create a higher code standard (because of the common hazards for the location) and then adopt the amended code. Others adopt the codes directly as written. Once codes are adopted by a state, its local levels have varying processes for code adoption.

“Virtually every adverse condition that can affect a building is found somewhere in the building codes. Building codes are tools, and just like any other tool, if you leave that tool in the tool chest, it is not put to good use.”

-- Stuart Tom

As a result, even if building codes have been improved, a state or local jurisdiction must adopt the updated building codes before new construction is required to meet them. Otherwise, new construction goes forward under the outdated versions. **Currently, only 33 percent of jurisdictions have adopted a current, updated disaster-resistant building code.**

The ICC website includes a [clickable map](#) to view which code, by year, is currently adopted in every state for 15 different I-Codes. The Federal Alliance for Safe Home, Inc., (FLASH®) has developed an online tool for anyone to identify the IRC currently adopted in their community (<https://inspecttoprotect.org/>). [Note, however, that mobile homes, manufactured housing, multifamily housing such as apartments, and certain types of townhomes are not constructed using the residential building code from this analysis, so this website is not applicable to those types of structures.]

Code Enforcement

Once codes are adopted, they must be enforced to be effective. This can only be achieved at the local level. Helping the public understand the importance of adopting and enforcing new codes can provide strong support at the community level.

CASE STUDY: Florida Building Code – 1998

- Florida consolidated building codes from more than 400 local jurisdictions and state agencies.
- Adoption of the Florida Building Code in 1998 phased out local laws and regulations and replaced them with universal statewide building codes.
- Today Florida has some of the strongest building codes in the country.
- In the decade following Florida’s adoption of a statewide building code, **the code’s adoption and application reduced windstorm actual losses by as much as 72 percent.**

“Effective enforcement can reduce losses by 15 to 25 percent. Effective enforcement of the codes could have reduced damages caused by Hurricane Andrew in Dade County, Florida, by \$4 billion.”

– Stuart Tom

Existing Buildings

Because building codes evolve, older buildings in a community will have been built to an earlier code standard. You must know how much protection was built into a building to know how safe you are from current hazards. Knowing the codes in effect when the building was approved can help you identify any needed retrofit actions to make the structure safer. [Note: It may be relatively simple to retrofit improvements to make the building safer (e.g., a non-structural retrofit), but other standards may be harder to implement in an existing building. The International Existing Building Code (IEBC) applies to alteration, repair, addition, or change in occupancy of existing buildings.]

Knowing the code standard of buildings in which we live, work, and play, will help people know how safe they are for the hazards they may face.

To determine the code that was in effect at the time a specific building was constructed:

- Contact the local building department to determine the year of issuance for the permit for the building. Archival records may not show when the building was built, but the permit year will likely be sufficiently close to the construction date.
- Use the year the permit was issued to find the archival copy of the code that was being enforced at that time. Remember that one building may have multiple permits if it has been improved over the years.

Codes and Insurance

Updated building codes and standards contribute to lower insurance rates. The Insurance Services Office (ISO) evaluates building codes annually. ISO's [Building Code Effectiveness Grading Schedule \(BCEGS\)](#) rates communities on a scale of 1 to 10, with 1 being exemplary commitment to code enforcement. The BCEGS assessment considers such things as the size of the building code enforcement budget relative to the amount of building activity, the professional qualifications of building inspectors, and past code enforcement levels, with special emphasis on mitigating losses due to natural disasters. Insurers understand that communities with a high BCEGS rating tend to have fewer losses during a catastrophe or disaster event, and they price policies accordingly, often with lower premiums. The prospect of reducing catastrophe-related damage and ultimately lowering insurance premiums provides another strong incentive for communities to enforce their building codes rigorously.

Take Action

- Code Adoption: What codes and standards has your state adopted and enforced, and what is its code adoption process? What codes have been adopted in your community?
- Code Enforcement: How are building codes enforced in your community? What training is available for inspectors? What is the documentation process?
- Existing Buildings: How old are the buildings in areas of high risk in your community? What were the building codes in effect when they were built? What can you do to improve the safety of those buildings? Do the people who live or work in those buildings understand their risk?
- Existing Buildings: What building codes were in place when your Emergency Operations Center (EOC) was built? Can any building mitigation measures bring your EOC more in line with the requirements of current building codes?
- Codes and Insurance: How does your community rate in the BCEGS report? Are efforts underway to improve the rating?

Topic 3: Support for Improved Building Codes

Codes are made by everyone. Code development is a public process and emergency managers should participate. Explaining the value of building codes to the residents in your state and your community can build support for adopting and enforcing the most up-to-date codes available. Emergency managers can work with local and state code officials to support public education efforts.

The Disaster Recovery Reform Act (DRRA) of 2018 includes several important sections that can help jurisdictions adopt and enforce building codes. The DRRA makes new forms of Federal assistance available, both pre- and post-disaster, to support strong building codes:

- *DRRA Section 1206: Code Implementation and Enforcement* authorizes FEMA to fund base and overtime wages for extra hires to facilitate implementation and enforcement of adopted building codes

as an allowable expense. **Building code administration and enforcement are now directly eligible at the start of a declared disaster.**

- *DRRA Section 1234: National Public Infrastructure Pre-Disaster Hazard Mitigation* authorizes a new program called the Building Resilient Infrastructure and Communities (BRIC), funded from the Disaster Relief Fund, as a six percent set-aside from estimated disaster grant expenditures. **Building Code implementation, adoption, strengthening, administration, enforcement, and training are all eligible under the new BRIC program.**

Take Action

- Does your community have code-focused public education efforts? How can your organization support or suggest these efforts?
- Are emergency managers and public officials aware of the new DRRA provisions that support building codes? Are you planning and preparing to apply for this assistance? Do you have Mission Ready Packages in place to be used for requesting this new assistance post-disaster?

Additional Resources

- [ICC Code Development Process Access](#)
This website allows anyone to sign up for an account to provide comments and recommendations on ICC codes.
- [FEMA Building Science Resources](#)
FEMA provides technical support to develop and adopt model building codes and standards and provides an extensive list of resources to improve building science design and performance, including building code resources and Mitigation Assessment Team Program reports. Email FEMA-Buildingsciencehelp@fema.dhs.gov or contact the Building Science Helpline at (866) 927-2104.
- [Disaster Recovery Reform Act of 2018](#)
This webpage provides status updates of FEMA's implementation of the DRRA provisions that require FEMA policy or regulation changes for full implementation, as the [Robert T. Stafford Disaster Relief and Emergency Assistance Act](#) is amended.
- [No Code. No Confidence. Inspect to Protect](#)
FLASH® has created this online tool to help the public identify the IRC used in their community, connect them with local officials, and give them access to a Resource toolkit with extensive commentary and facts on building codes.
- [ISO's Building Code Effectiveness Grading Schedule \(BCEGS®\)](#)
The BCEGS assesses the building codes in effect in a community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The 2019 National Building Code Assessment Report provides the latest information on building code effectiveness and enforcement nationwide.

- [Natural Hazard Mitigation Saves, 2018 Interim Report](#)
This report by the National Institute of Building Sciences highlights the significant savings that result from implementing mitigation strategies, both for safety and to prevent property loss and disruption of day-to-day life.
- [Standards Development Organizations \(SDOs\)](#)
Beyond building codes, many organizations create standards on a variety of topics. This link provides a comprehensive list of SDOs.