



# Building Codes Strategy

Federal Emergency Management Agency

March 2022



FEMA

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# Foreword

It is my privilege and honor to present the FEMA Building Codes Strategy. This document will guide FEMA and help lead our nation towards improved resilience through hazard-resistant building codes and standards.

When a community adopts and enforces hazard-resistant building codes and standards, it lays the foundation for increased resilience and a culture of preparedness by making mitigation a standard practice.

Disasters have a devastating impact on communities across the country – destroying homes, loss of lives and causing catastrophic damage. Moreover, the intensity and frequency of natural disasters will only increase in the coming years due to climate change. Disaster-resistant building codes and standards play a key role in building disaster resilience and mitigating against catastrophic loss.

Representatives from across FEMA have been working hand-in-hand with stakeholders daily for more than two years to capture diverse perspectives and priorities. This strategy organizes our agency's efforts internally over the next several years, but is also oriented externally towards public officials, building regulators, planners, emergency managers and responders, design professionals, the building industry, owners and operators, and the public.

Three core goals will guide FEMA towards a unified agency voice, acting with shared priorities regarding the continued improvement and implementation of hazard-resistant building codes and standards. These goals are:

Goal 1: Integrate Building Codes and Standards Across FEMA

Goal 2: Strengthen Nationwide Capability for Superior Building Performance

Goal 3: Drive Public Action on Building Codes

These goals will drive us to coordinate and prioritize our agency's activities to advance the adoption and enforcement of disaster-resistant building codes and standards for FEMA programs and communities nationwide. The strategy also considers the role that building codes have on addressing the effects of climate change by promoting equity and protecting vulnerable communities. We know that disasters do not impact communities equally and our nation is stronger when our most vulnerable communities are more resilient.

This document is just the first step in a comprehensive building codes implementation at local jurisdictions and to help the federal government align building codes across the nation. These efforts will better prepare our nation for disasters, mitigate the impact of those disasters when they inevitably occur and ultimately help save lives and minimize property loss.

The journey towards these far-reaching efforts starts here at home with the FEMA Building Codes Strategy. A FEMA that acts in unison regarding effective hazard-resistant building codes and standards is a FEMA better prepared to drive action towards improved resilience. We have a long road ahead of us, but the final reward will be a safer and more resilient nation.



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Deanne Criswell

Administrator

February 28, 2022

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Date

# Executive Summary

The FEMA Building Codes Strategy defines the goals and objectives that FEMA will pursue to create a more resilient nation through superior building performance. It calls on FEMA to align its efforts to help promote the application, adoption and enforcement of building codes across the nation.<sup>1</sup>

For over 42 years, FEMA has led the nation in preparing for, preventing, responding to and recovering from an increasing volume of natural disasters of all types, ranging from flood and tornados to wildfires, earthquakes and hurricanes. In the past two years, each individual region has been impacted by unique disasters, such as landslides, hail, severe storms, historic wildfires and a nationwide Coronavirus pandemic, in addition to those listed above. Regardless of the disaster and geographic location, building codes are an essential and effective mitigation and recovery tool. This Strategy places FEMA in a better position to support community implementation of building codes and best practices to protect properties, save lives and enhance building and community resilience. The Strategy's three goals, supported by fourteen objectives, provide a roadmap to unite FEMA's programs and policies, strengthen its capabilities and unify its messaging to drive public action (Figure 1).



**Figure 1. FEMA Building Codes Strategy Goals**

Goal 1 calls on FEMA program, regional, and field offices to integrate strong codes and standards and adopt consistent agency policies and program guidance that will help provide a firm foundation for the agency and the nation. Goal 2 recognizes the need to strengthen disaster mitigation, preparedness, response and recovery capabilities across FEMA, all levels of government and external partners to improve building performance. Finally, Goal 3 realizes the vision of a nation that values building codes and takes action to save lives, reduce climate change impacts and construct more resilient communities nationwide. These goals are reflective of FEMA's commitment to enact strategy through action, address challenges proactively and achieve a more resilient future.

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<sup>1</sup> For clarity in this document, "Building codes" refers to the set of published editions of codes, specifications and standards, including relevant hazard-resistant provisions, which were developed by voluntary consensus standards bodies, to protect public health and safety.

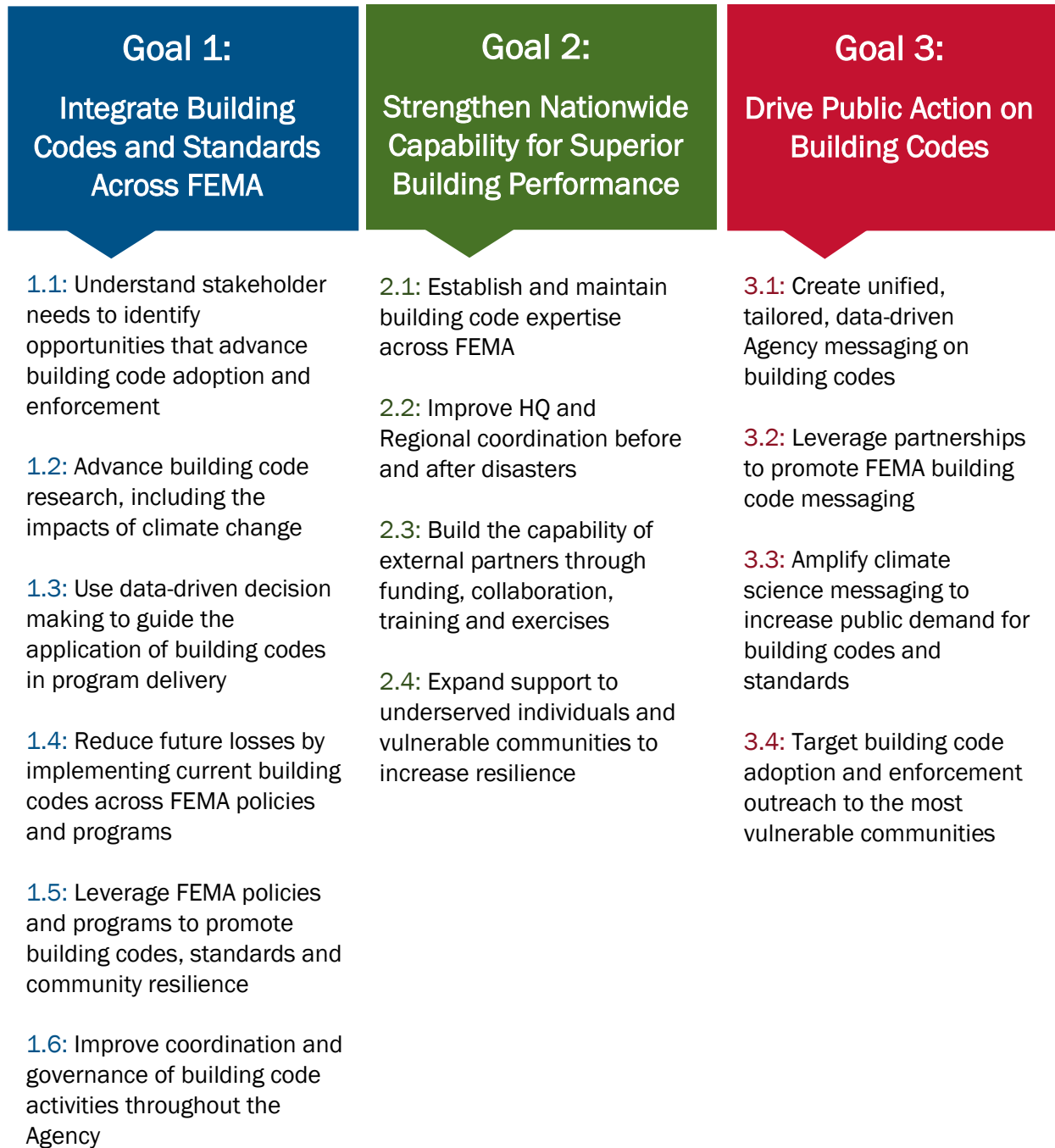
# Table of Contents

Foreword.....	1
Executive Summary .....	3
FEMA Building Codes Mission and Vision.....	5
Introduction .....	6
<b>Goal 1: Integrate Building Codes and Standards Across FEMA .....</b>	<b>14</b>
Objective 1.1: Understand stakeholder needs to identify opportunities that advance building code adoption and enforcement.....	14
Objective 1.2: Advance building code research, including the impacts of climate change .....	15
Objective 1.3: Use data-driven decision making to guide the application of building codes in program delivery .....	16
Objective 1.4: Reduce future losses by implementing current building codes across FEMA policies and programs .....	17
Objective 1.5: Leverage FEMA policies and programs to promote building codes, standards and community resilience.....	18
Objective 1.6: Improve coordination and governance of building code activities throughout the Agency.....	19
<b>Goal 2: Strengthen Nationwide Capability for Superior Building Performance .....</b>	<b>21</b>
Objective 2.1: Establish and maintain building code expertise across FEMA .....	21
Objective 2.2: Improve HQ and Regional coordination before and after disasters .....	22
Objective 2.3: Build the capability of external partners through funding, collaboration, training and exercises .....	22
Objective 2.4: Expand support to underserved individuals and vulnerable communities to increase resilience .....	23
<b>Goal 3: Drive Public Action on Building Codes .....</b>	<b>25</b>
Objective 3.1: Create unified, tailored, data-driven Agency messaging on building codes .....	25
Objective 3.2: Leverage partnerships to promote FEMA building code messaging .....	26
Objective 3.3: Amplify climate science messaging to increase public demand for building codes and standards .....	27
Objective 3.4: Target building code adoption and enforcement outreach to the most vulnerable communities.....	27
<b>Conclusion .....</b>	<b>29</b>
<b>APPENDIX A: Acronyms.....</b>	<b>30</b>
<b>APPENDIX B: Building Codes Strategy Foundations .....</b>	<b>32</b>
<b>APPENDIX C: Definitions of Key Terms .....</b>	<b>35</b>
<b>APPENDIX D: Examples of Common Building Codes, Specifications and Standards.....</b>	<b>37</b>
<b>APPENDIX E: Building Codes Timeline.....</b>	<b>40</b>

# FEMA Building Codes Mission and Vision

**Vision:** A resilient nation with superior building performance in disasters.

**Mission:** To coordinate and prioritize FEMA’s activities to advance the adoption and enforcement of disaster-resistant building codes and standards for FEMA programs and communities nationwide.



# Introduction

This Strategy is the product of coordination among a multitude of skillsets, viewpoints, programs and organizations, research, countless discussions, questionnaires and multiple reviews. At every stage, from data collection to drafting, particular care was taken to ensure that diverse perspectives, insights, needs and differing priorities among distinct mission areas helped inform Strategy development. The numerous dedicated personnel who helped develop this Strategy did so with the understanding that their work would further FEMA's Vision and Mission, personify its values and create a new Building Codes Vision, Mission and Strategy. These core statements front the opening pages of this document in the same manner that they led, focused and inspired its development.

## FEMA Vision and Mission

**Vision:** *A prepared and resilient nation.*

**Mission:** *Helping people before, during and after disasters.*

## FEMA Core Values

FEMA's core values are ***compassion, fairness, integrity and respect***. These values represent what the agency stands for and impact how FEMA implements programs and interacts with communities nationwide. The FEMA Building Codes Strategy is no exception – throughout every phase of Strategy execution and implementation, FEMA will ensure that its core values are represented. These values define all FEMA interactions with partners and program delivery implementation in communities nationwide.

## Why Building Codes?

Building codes save lives and property. The National Institute of Building Sciences (NIBS) *Natural Hazard Mitigation Saves: 2019 Report* found that designing buildings to the standards of the 2018 International Building Code (IBC) and International Residential Code (IRC) resulted in a national benefit of \$11 saved for every \$1 invested when compared to the 1990-era codes and National Flood Insurance Program (NFIP) Requirements.<sup>2</sup> In addition, according to FEMA's 2020 *Building Codes Save* study, over a 20-year period, cities and counties with modern building codes have avoided at least \$32 billion in losses from natural disasters.<sup>3</sup> Despite this high return-on-investment, at the time of the report, only 35% of localities across the country had adopted modern building codes without weakening the natural hazard-resistant provisions.

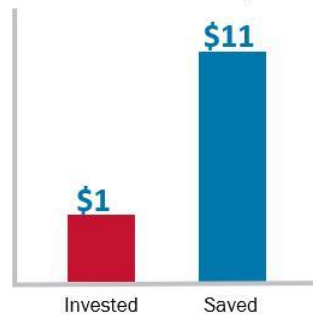
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<sup>2</sup> Natural Hazard Mitigation Saves <https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report>.

<sup>3</sup> Building Codes Save: A Nationwide Study [https://www.fema.gov/sites/default/files/2020-11/fema\\_building-codes-save\\_study.pdf](https://www.fema.gov/sites/default/files/2020-11/fema_building-codes-save_study.pdf) defines localities with "modern building codes" as those that have adopted the two most recent editions of the I-Codes available at the time of publication (the 2015 and 2018 editions).



Natural Hazard Mitigation Saves:  
2019 Report



**Figure 2. National Benefit of Building Code Adoption**

When examined through the lens of equity and climate change, low adoption and enforcement of the latest national building codes and standards becomes an especially acute problem. According to the U.S. Surgeon General's 2009 *Call to Action to Promote Healthy Homes*, populations who are low-income, minority or persons with disabilities are substantially more likely to live in poor-quality housing.<sup>4</sup> Moreover, when disasters strike, communities without access to higher-quality housing are disproportionately impacted. They are more likely to experience financial losses, personal hardship and significant building damage. As a result, they are less likely to recover than communities with higher-quality housing constructed according to the latest building codes and standards.



**Figure 3. An example of a home sustaining major damage during Hurricane Sandy in Union Beach, N.J. in 2012.**

In addition, studies link climate change to an increase in the probability of extreme weather events. According to the National Oceanic and Atmospheric Administration (NOAA), there were twenty-two natural disasters in 2020 with losses exceeding \$1 billion in the U.S.– a new annual record and the

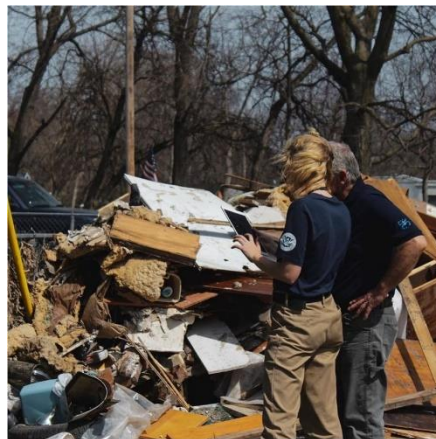
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<sup>4</sup> The Surgeon General's Call to Action To Promote Healthy Homes  
[https://www.ncbi.nlm.nih.gov/books/NBK44192/pdf/Bookshelf\\_NBK44192.pdf](https://www.ncbi.nlm.nih.gov/books/NBK44192/pdf/Bookshelf_NBK44192.pdf)

sixth year in a row where ten or more billion-dollar disasters occurred.<sup>5</sup> Floods are the most common natural disaster in the United States and constitute 90% of all U.S. natural disasters. The increasing frequency and intensity of natural disasters make the need for adoption of building codes and standards more urgent to reduce the vulnerability of structures to hazards. Building codes and standards are:

- Critical to the effective execution of FEMA’s Mission;
- Effective for dealing with the impact of climate change; and
- An essential tool for helping to protect the lives and property of vulnerable and underserved communities.<sup>6</sup>

FEMA program, regional, and field offices have a critical role in supporting the FEMA Building Codes Strategy. To date, policies, practices and subject matter expertise related to building codes have varied across FEMA, creating disconnected priorities and implementation strategies, as well as inconsistent messaging regarding the value and objectives of building codes and best practices. This Strategy promotes internal coordination and alignment of priorities across FEMA programs related to building codes and best practices. It guides FEMA’s efforts, both inside and outside the agency, and highlights the benefits that building code implementation and best practices deliver towards reducing losses and increasing resilience across the country.<sup>7</sup>



**Figure 4. After Nebraska experienced severe flooding, FEMA supported community members by helping them register for disaster assistance.**

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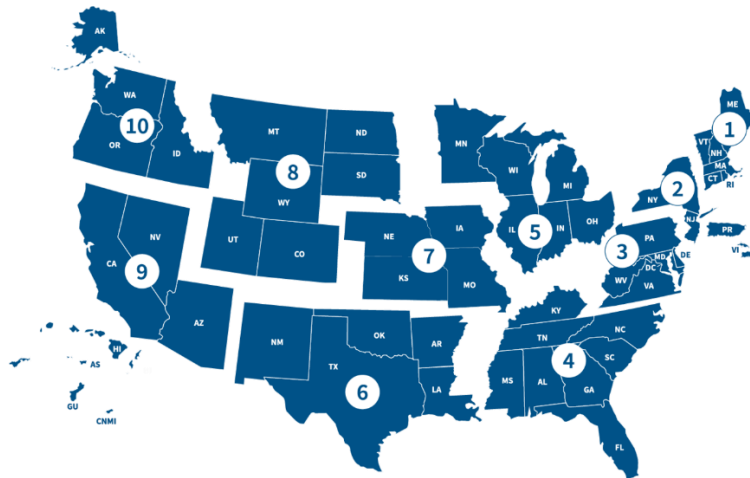
<sup>5</sup> Record number of billion-dollar disasters struck U.S. in 2020 – NOAA <https://www.noaa.gov/stories/record-number-of-billion-dollar-disasters-struck-us-in-2020>

<sup>6</sup> Refer to Appendix C for definitions of vulnerable and underserved communities.

<sup>7</sup> FEMA has adopted the National Institute of Standards and Technology (NIST) definition of community resilience, which is “the ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.”

## Audience and Stakeholders

The FEMA Building Codes Strategy audience includes FEMA offices and personnel involved in implementing programs, policies, and guidance that advance the adoption, enforcement and application of building codes and standards at FEMA program, regional and field offices. Implementation activities may include, but are not limited to, policy and guidance development, research, coordination and collaboration, messaging, technical assistance, training and exercises. Additional interested stakeholders may include external audiences ranging from other federal agencies, SLTT governments, code officials, fire marshals, fire chiefs, design professionals, building owners and operators, construction contractors, builder associations, building materials research and manufacturing industries, planners, academia, individual homeowners and others.



**Figure 5. The Federal Emergency Management Agency consists of ten regions in the continental United States and territories.**

## Strategic Environment

The Strategy reflects the environment in which it was developed, which includes a growing awareness of the value of building codes to disaster mitigation, consideration of climate change, community lifelines, existing policy and guidance, social equity and contributions of federal and private sector experts.

This Strategy also addresses the importance of targeting and supporting low-income, disabled and minority populations who are significantly more likely to live in structurally unsafe housing. *Building Codes Save* states that improvements in building codes and standards are a priority for vulnerable populations because “Low income housing built to I-Codes reduces impacts to those least able to absorb them.”<sup>8</sup>

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<sup>8</sup> Building Codes Save: A Nationwide Study [https://www.fema.gov/sites/default/files/2020-11/fema\\_building-codes-save\\_study.pdf](https://www.fema.gov/sites/default/files/2020-11/fema_building-codes-save_study.pdf)



**Figure 6. FEMA Corps team members speak with a Hurricane Harvey survivor in a rural part of Robstown, Texas.**

Community lifelines in particular influenced Strategy development in multiple ways. Community lifelines are fundamental services that enable the continuous operation of critical government and business functions and are essential to human health and safety or economic security. During disaster situations, these vital services within a community must be stabilized or re-established to alleviate threats to life and property. While the Strategy’s focus is on buildings, lifelines are a significant strategic priority for the agency and FEMA will consider community lifelines and infrastructure in the forthcoming federal and national efforts.<sup>9</sup>

Buildings play a key role in all seven of the community lifelines listed below, which are essential for enabling more resilient communities:

- Safety and security;
- Food, water, shelter;
- Health and medical;
- Energy;
- Communications;
- Transportation; and
- Hazardous Material.

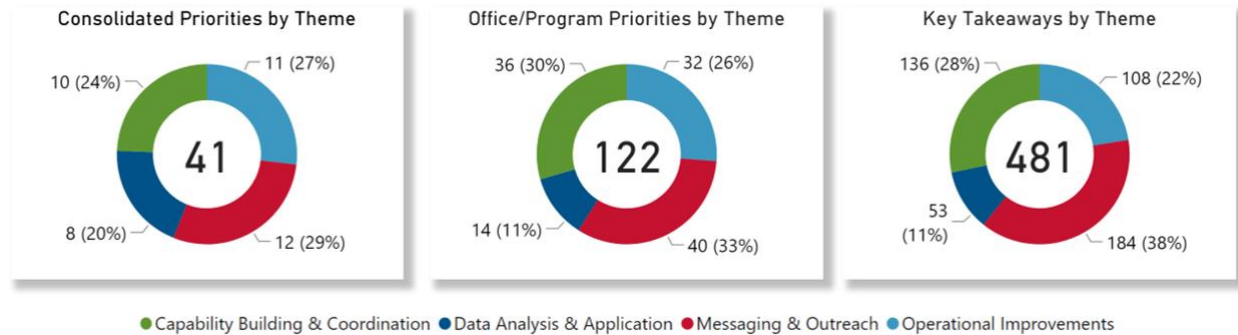
## Strategy Development

Strategy formation began in July 2019 with the initial development of various foundational reference documents such as Building Codes 101 and FEMA’s Role in Building Codes Fact Sheet. Additionally, FEMA stood up the Building Codes Enterprise Steering Group to coordinate the development of this Strategy. The BCESG, a decision-making body comprised of executives across FEMA, is supported by the staff level Building Codes Work Group. Each group met regularly throughout the Strategy development process.

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<sup>9</sup> Community Lifelines – FEMA <https://www.fema.gov/emergency-managers/practitioners/lifelines>

The BCESG developed the Strategy over two years and began with 85 interviews across the agency, including all ten (10) FEMA Regions. These interviews were a part of a landscape analysis that helped identify a baseline of how the agency interacts with, influences the application of, or funds the implementation of building codes and standards through planning or construction grants. The landscape analysis also captured component-specific priorities for an agency-wide building codes strategy.<sup>10</sup>



**Figure 7. Strategic Themes by Priorities and Key Takeaways**

This review yielded more than 481 key takeaways and insights represented through 122 priorities validated by FEMA components. The 122 priorities were examined for similarities and duplications and consolidated into 41 unique priorities. The BCWG analyzed the agency’s 41 consolidated priorities through a series of working sessions and categorized them into four strategic themes:



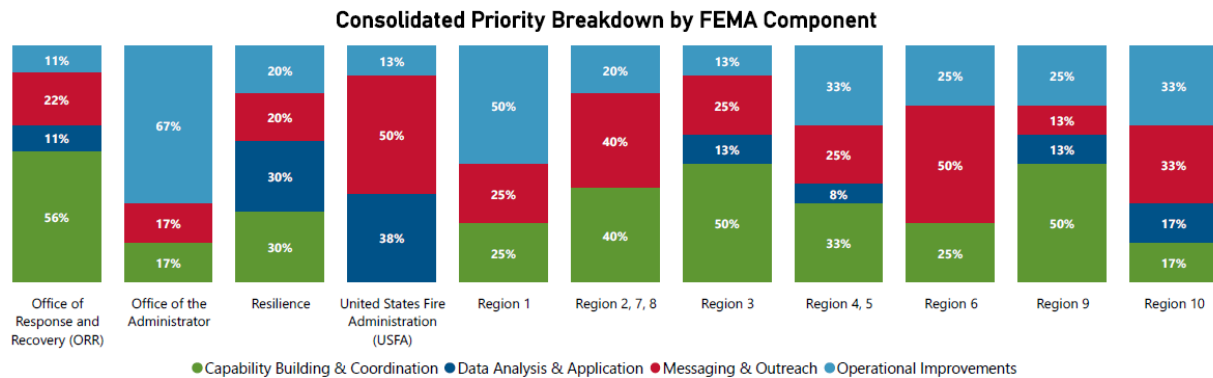
**Figure 8. Strategic Themes**

In October of 2020, the BCWG began its data processing work by thematically organizing and grouping the 481 key takeaways with labels like “subject,” “FEMA output,” “dependencies,” and various others. Power BI, a data analysis software, was used to analyze the tagged data and identify key outputs, common subjects and gaps. Additionally, the tagged data helped create “impact” and

<sup>10</sup> Component priorities were informed by landscape analysis interviews with FEMA offices and regions, including: Federal Insurance Directorate, Federal Insurance and Mitigation Administration (FIMA) Integration Office, Risk Management Directorate, Mitigation, National Preparedness, Office of Disability Integration and Coordination, Office of External Affairs, Office of Policy and Program Analysis, Office of the National Advisory Council, Recovery, Regions (1-10), Response, and United States Fire Administration

“effort” scores for each consolidated priority – giving the BCWG a clear idea of the difficulty, benefits and potential impact of achieving each priority. The scoring helped target FEMA efforts moving forward into Strategy implementation.

Using Power BI, an interactive dashboard was created, allowing users to drill down through the various layers of the data and illustrate different aspects of the data at each level. The interactive dashboard enabled components to track their respective priorities throughout the landscape analysis process, from strategic themes back to key takeaways from the interview process. The process ensured that the final Strategy clearly and accurately represented all component priorities.



**Figure 9. Strategic Themes by FEMA Component**

The Power BI dashboard informed discussions during four intensive working sessions held with all BCWG members between January and April 2021. During these working sessions, BCWG members analyzed consolidated priorities and underlying data for each theme to develop goals and objectives. BCWG members agreed that the priorities aligned under the “Operational Improvements” and “Data Analysis & Application” strategic themes were similar enough that the two themes could be combined to support one strategic goal. The outcomes of these working sessions were **three** strategic goals and **14** supporting objectives, which were sent to the BCESG for final approval.

## Looking Forward

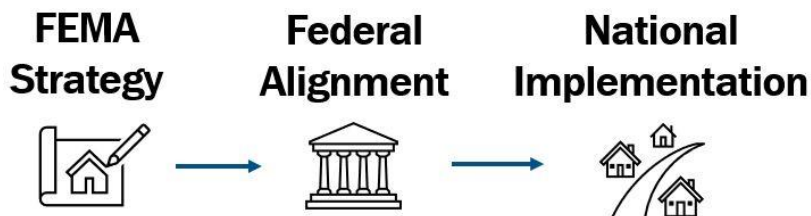
In addition to developing this Strategy, FEMA has created a FEMA Building Codes Strategy Implementation Plan which provides the operational processes and short, medium and long-term planning necessary to accomplish the goals and objectives laid out here. This planning is articulated through performance measures and activities that describe how the objectives will be achieved through various individual activities. These activities cover topics that include, but are not limited to, data collection and analysis, additional subject matter expertise, coordination and collaboration, best practices, policy development, technical assistance, messaging, training, exercises and other elements necessary to implement the Strategy.



**Figure 10. This couple built their home using best practices and endured little damage after two hurricanes struck Puerto Rico in 2017. Photo by Kenneth Wilsey, FEMA.**

The Strategy and the Implementation Plan represent FEMA’s first step towards a comprehensive strategic effort to achieve the vision of a resilient nation with superior building performance in disasters. Following the FEMA Strategy and Implementation Plan, a federal alignment will be conducted to help coordinate the efforts of other federal agencies and advance the application of building codes in their respective priorities, initiatives and missions.

Ultimately, following collaboration and coordination with federal stakeholders through the federal alignment on building codes, FEMA will lead an effort that focuses on national implementation. This national effort will be led by a coalition of the willing to help coordinate the efforts of the whole building codes community, including the public, federal agencies, SLTT governments, non-governmental organizations (NGOs) and the private sector, to advance the adoption, enforcement and application of building codes.



**Figure 11. Planned Strategy Progression**

# Goal 1: Integrate Building Codes and Standards Across FEMA



## Supporting Priorities & Desired Outcome

**Goal 1** represents priorities and takeaways from two strategic themes: **Data Analysis & Application** and **Operational Improvements**. Recommendations regarding operations and data revolve around several actions, including alignment of policy and guidance, the creation of a strong organizational culture around the importance and use of building codes and better integration of data across programs and platforms. This goal is also representative of the BCESG Mission, which emphasizes the coordination and prioritization of FEMA's activities to advance the application, adoption and enforcement of disaster-resistant building codes and standards for FEMA programs and communities nationwide.

**Outcome:** FEMA will promote and integrate current building codes in its program requirements and messaging to increase understanding, application, adoption and enforcement of codes.

## Objective 1.1: Understand stakeholder needs to identify opportunities that advance building code adoption and enforcement

**Understanding is the first step towards integration.** With a strong understanding of internal and external stakeholder needs comes the opportunity to identify gaps and advance the adoption and enforcement of building codes. In addition, this increased understanding creates opportunities to advance building codes by providing FEMA sufficient information to tailor messaging and program offerings.

Understanding the needs of stakeholders enables FEMA to:

- Better incorporate building codes and standards into engagement conversations;
- Promote collaboration; and
- Support building code adoption and enforcement through programs.

Engagement, equity and progress start with understanding stakeholder needs and pursuing opportunities to increase building code adoption and enforcement, especially for those communities that are vulnerable and underserved. Establishing an in-depth understanding of stakeholders and their priorities starts with listening. Critical building code research, including climate change impact inquiries, comes next.



## Objective 1.2: Advance building code research, including the impacts of climate change

**Research is the cornerstone from which integration can advance.** While the primary research agency of DHS is the Science and Technology Directorate (S&T), FEMA does collaborate on research and development with other Federal agencies, such as the National Institute of Standards and Technology (NIST) and others, that are responsible for carrying out the science policy of the United States. Research and studies open new opportunities for FEMA to creatively explore solutions to building performance and code-related barriers. It enables FEMA to understand and replicate successes and address impacts from daunting challenges such as climate change. Conducting, sponsoring and supporting research studies, such as basic research, validation, pilot project, technology transfer and field assessments helps FEMA to:

- Develop improved understanding and insights into how the latest science and technology can improve the performance of new and existing buildings and their associated utility systems;
- Lead the way in the validation and development of successful, economical repair and strengthening methods for existing buildings after a disaster event;
- Quantify the impact of code adoption and enforcement and better understand how the effects of climate change can be addressed by modern building codes and standards;
- Evaluate the current code and land use policy landscape and advocate for, as well as participate in, the development of building codes, standards and other land use tools; and
- Evaluate public perception of building codes in high-risk areas to help identify what barriers there may be to retrofitting structures to new standards.

Research is forward-looking, setting the stage for innovation. Advancements in building code administration technologies such as e-permitting, artificial intelligence, virtual inspections, use of drones and machine learning can help solve problems in the design, construction and operation of buildings and their systems to resist natural hazards. New, sustainable and environmentally-safe construction materials can be studied, standardized and implemented. Having a more robust knowledge of available tools and emerging technologies helps communities prepare for climate change effects such as sea-level rise, extreme heat, heavy rainfall and increased prevalence and intensity of natural disasters.

Similarly, promoting and using building code research and studies to regularly update learning courses in line with code cycles for appropriate FEMA staff is essential to ensuring a working knowledge of the latest building codes. In addition, translating research and studies into updated programs, policies and guidance enables FEMA to better understand climate change impacts on vulnerable communities and drive more equitable product development, funding alternatives, policy considerations and program delivery. Research and the associated data analysis is a powerful tool that enlightens challenges, inspires new ideas and prepares a path towards more effective, data-driven decision making.



When Puerto Rico adopted the 2018 International Code Council (ICC) family of codes, they included significant local amendments in the Puerto Rico Building Code. For example, they added new wind speed and seismic design category maps and more restrictive design requirements for storm shelters and critical facilities. Microzone Wind Speed Maps are now used to determine basic wind speeds throughout Puerto Rico. The maps account for wind speed effects due to topographic features and produce more accurate results. The windspeed data was developed through a FEMA-funded wind tunnel study of Puerto Rico's topography. Using more precise wind speeds for wind load calculations will significantly reduce damage and reconstruction efforts after future storms.



**Figure 12. Visible severe (red) and moderate (orange) topographic wind speed impacts in Puerto Rico. Photo by Stuart Adams.**

### **Objective 1.3: Use data-driven decision making to guide the application of building codes in program delivery**

**Integration is administered through data-driven decision-making.** When FEMA uses the information, expertise and data carefully analyzed through program, regional, field offices and partners, it can make well-informed decisions that achieve better integration, wiser policy development and improved program implementation and operations. Data-driven decision-making is the process of making decisions based on actual data and proper analysis rather than intuition or observation alone. Because FEMA programs significantly impact states, communities, businesses and property across the nation, decisions related to building codes and program delivery must:

- Be driven by adequate and appropriate data;
- Use relevant data; and
- Be critically analyzed for applying building codes and best practices more effectively across programs and through mission execution.

Effective data management and visualization helps generate feedback to improve program delivery. This could include developing a procedure to collect project information across the regions. Project information could be incorporated into a data management and visualization system to identify successful projects and geographic or programmatic areas that require improvement. Decisions driven and informed by appropriate data and its proper analysis enable FEMA to better guide the application of building codes in program delivery and operations. These principles will help guide FEMA in making informed decisions, providing consistent requirements and moving programs forward across the agency.

### **Objective 1.4: Reduce future losses by implementing current building codes across FEMA policies and programs**

**Consistent implementation expedites integration.** Aligning FEMA programs, policies and guidance around a consistent set of building codes is necessary in establishing minimum requirements that better focus effort, action and ultimately, lay the groundwork for reduced damage losses. Various building code requirements and standards are already part of numerous FEMA programs such as the National Flood Insurance Program. There are also varying requirements and conditions of grant award through differing policy requirements across many different grant programs, such as Public Assistance (PA) and Hazard Mitigation Assistance (HMA). Better aligning current building code requirements across policies and programs at FEMA will help:

- Ensure a consistent baseline understanding for both program staff, applicants and participating communities;
- Minimize inconsistent policies; and
- Reduce complexity and increase the efficiency of FEMA program delivery.

This objective underscores the importance of FEMA developing and facilitating consistent, appropriate building codes and standards messaging to promote clearer understanding and requirements of various policies and programs. This includes addressing the various kinds of efforts, projects and programs that FEMA funds or oversees, from outreach to construction. Specific areas of importance include messaging around targeted requirements for existing buildings, detailing when a licensed professional or certified skillset is required and detailing that all design and construction should be in compliance with state and local licensing and permitting requirements.

Consistency in requirements and implementation across FEMA policies and programs can help reduce future losses, strengthen messaging, make programs more equitable and build the foundation for promoting building codes and improved community resilience.

## Objective 1.5: Leverage FEMA policies and programs to promote building codes, standards and community resilience

**Existing resources boost integration.** FEMA can leverage the vast experience and expertise of its workforce and drive integration by tapping into existing policies, programs and resources to elevate and promote building code messaging.

FEMA must leverage and maximize the agency's investment in building codes and standards activities using existing agency resources, policies and programs. Programs and policies such as Building Resilient Infrastructure and Communities, *FEMA Policy 104-009-11, Consensus-Based Codes, Specifications and Standards for Public Assistance*, mitigation planning and others help FEMA support communities to become more resilient to natural hazards through building codes and standards application, adoption and enforcement.<sup>11</sup> Incorporating appropriate building codes and standards content across agency programs or initiatives allows FEMA to:

- Leverage established stakeholder platforms;
- Secure broad reach to support the advancement of the Strategy's goals; and
- Further enable cross-agency sharing of successes and lessons learned.

Examples include the Resilient Nation Partnership Network (RNPN), RiskMAP community engagements, whole community support through interagency coordination of the National Disaster Recovery Framework (NDRF) and other post-disaster community outreach and stakeholder engagement efforts. Disseminating messaging across platforms helps stakeholders make the connection between programs and identify ways to integrate policy and program guidance within their organizations. Ultimately, leveraging existing resources to promote building code messaging is efficient, strategic and can support the coordination and governance of code activities agency-wide.



### Building Codes Protect Homes from Wildfire

The Thomas Fire in December 2017 claimed two lives, burned 281,893 acres and destroyed more than 1,000 structures before it was contained on January 12, 2018. The Montecito Fire Protection District (MFPD), a small coastal community in California, saw the loss of only **seven structures**, a remarkably low number given the extreme fire behavior it experienced. The low

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<sup>11</sup> FEMA Policy 104-009-11, Consensus-Based Codes, Specifications and Standards for Public Assistance [https://www.fema.gov/sites/default/files/2020-05/DRRA1235b\\_Consensus\\_BasedCodes\\_Specifications\\_and\\_Standards\\_for\\_Public\\_Assistance122019.pdf](https://www.fema.gov/sites/default/files/2020-05/DRRA1235b_Consensus_BasedCodes_Specifications_and_Standards_for_Public_Assistance122019.pdf)

fire loss was due to the successful mitigation strategies the Montecito community pursued for over two decades beginning in 1994.

These pre-fire mitigation strategies included the creation of wildland fire specialist positions that worked directly with homeowners to reduce the risk of their homes burning, increase defensible space around their homes, as well as reducing fuel availability in the District. The MFPD also **changed the building codes** to ban cedar shakes for roofing and siding, required boxed eaves and created a new requirement for wider driveways, which helped residents evacuate faster and serve as turnaround space for large fire apparatus. When the Thomas Fire evacuation was ordered on December 10, 2017, firefighters were aided by defensive landscaping and code changes that made homes more fire resistant.

## Objective 1.6: Improve coordination and governance of building code activities throughout the Agency

**Coordinated governance is crucial for successful integration.** Multiple sources of information or messaging can lead to confusion, inaccurate information or conflicting data. When it comes to building codes, FEMA requires efficient, organized and well-informed governance to help support activities throughout the agency.

Better organized building code efforts and cross-agency collaboration on code-related questions and activities require improved coordination and governance. This will help FEMA:

- Coordinate FEMA multi-component and agency-wide building code activities;
- Develop a clearinghouse to help FEMA operations reduce complexity and increase collaboration across FEMA program, regional and field offices;
- Address building code related concerns or gaps in activities that may fall between program areas, organizations or other operations;
- Share and integrate building code data and analysis across existing data platforms and relevant systems at the agency;
- Track completed and ongoing building code related projects and task orders being managed by HQ and the regions; and
- Work to ensure the consistent implementation of building code related policy such as the Disaster Risk Reduction Minimum Codes and Standards (FEMA Policy 204-078-2) as amended or superseded.<sup>12</sup>

As mentioned by the U.S. Government Accountability Office (GAO) in their 2019 GAO-20-100SP report, *Disaster Resilience Framework: Principles for Analyzing Federal Efforts to Facilitate and*

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<sup>12</sup> FEMA Policy 204-078-2, Disaster Risk Reduction Minimum Codes and Standards <https://www.iccsafe.org/wp-content/uploads/FP-204-078-2.pdf>

*Promote Resilience to Natural Disasters*, federal agencies can serve as trusted clearinghouses for disaster risk information, producing valuable information to help decision-makers assess their risk.<sup>13</sup> To support this endeavor, a wide variety of FEMA program, regional and field offices with knowledge of building codes, policy, program and operational expertise could be represented in such a clearinghouse to ensure a broad knowledge base and help foster coordination. A clearinghouse enables FEMA to better integrate, communicate, collaborate and ultimately help guide the nation to improved building and community disaster resilience.

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<sup>13</sup> GAO-20-100SP, *Disaster Resilience Framework: Principles for Analyzing Federal Efforts to Facilitate and Promote Resilience to Natural Disasters* <https://www.gao.gov/assets/gao-20-100sp.pdf>

## Goal 2: Strengthen Nationwide Capability for Superior Building Performance



### Supporting Priorities & Desired Outcome

**Goal 2** captures the priorities and takeaways contained within the **Capability Building & Coordination** strategic theme. The need for increased coordination and capability through training, both internal to the agency and external to partners, was a significant trend in the landscape analysis data because of the variety of expertise required by the application, adoption, implementation and enforcement of building codes and best practices. Similarly, this goal also draws upon the foundational FEMA Building Codes Vision, “A resilient nation with superior building performance in disasters.”

**Outcome:** The Federal Insurance and Mitigation Administration (FIMA), with input from the Planning, Safety and Building Science Division and other FEMA components, will inform the update of and provide technical assistance to support the development, understanding, adoption and enforcement of building codes across the nation, especially among vulnerable communities.

### Objective 2.1: Establish and maintain building code expertise across FEMA

**Strengthening nationwide capability starts with FEMA.** Ensuring that all FEMA staff have access as appropriate to the most up-to-date building code information and adequate training builds a base of expertise that can disseminate understanding through FEMA programs and operations. Expanding building code expertise across FEMA means:

- Maintaining, expanding and strengthening building code knowledge among all FEMA personnel, particularly those who work with building codes;
- Providing staff with easily accessible code resources and supporting tools for continuous learning and engagement; and
- Investing in role-specific building code expertise – for example, educating grant management representatives to have an in-depth understanding of residential and commercial building codes.

FEMA staff are the agency’s most important resource and building their proficiency with and knowledge of building codes is critical to the success of the Strategy. FEMA is making an investment in building code expertise throughout the organization by incorporating content into training, continuing education and resources. This investment helps build the groundwork for all of FEMA’s building code initiatives and provides a strong foundation for improving coordination on building code matters across the agency.

## Objective 2.2: Improve HQ and Regional coordination before and after disasters

**Coordination within FEMA leads to increased capability across the nation.** Improving internal coordination between FEMA Headquarters (HQ) and the regions – the parts of FEMA that work most directly with SLTTs before, during and after disasters – is an essential step towards supporting response operations and increasing the capability of SLTTs to adopt and enforce building codes across the nation. Strengthening the bridge between FEMA HQ and regions through communication and coordination will also improve the agency’s ability to proactively incorporate building codes within FEMA programs before and after disasters. Benefits of improving HQ and regional coordination include:

- Increased distribution of building code guidance, success stories and best practices among FEMA program, regional and field offices;
- More cohesive, consistent messaging on building code topics; and
- Streamlined access to data, guidance and messaging resources before, during and after disasters.

Updated existing tools and communication channels foster cross-agency coordination and improved understanding of building code findings observed in the field, including success stories that help inform messaging. An example of an existing building code data platform is FEMA’s Building Code Adoption Tracking (BCAT) tool, which tracks the adoption rate of the latest consensus-based codes across the nation.<sup>14</sup> Emerging data from this tool and others can inform FEMA policies and programs in pre-disaster and post-disaster situations.

The clearinghouse proposed in Objective 1.6 can serve as the conduit for sharing building code data with relevant FEMA program, regional and field offices. Increasing coordination between HQ and regions also requires establishing measurements of success pertaining to recovery and building codes across the regions. Examples include developing a procedure to collect Public Assistance, Hazard Mitigation Assistance and other project information across the regions and incorporating it into a visualization tool (such as a geographic information system (GIS)) that can be used to facilitate engagement with SLTTs. Increasing coordination between HQ and the regions also improves coordination between FEMA and external partners – enabling FEMA to more effectively increase the ability of those partners to adopt and enforce building codes.

## Objective 2.3: Build the capability of external partners through funding, collaboration, training and exercises

**More proficient external partners mean increased capability nationwide.** FEMA plays a valuable role in increasing national building code capabilities by working with external partners to increase

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<sup>14</sup> 2021 Building Code Adoption Tracking Overview [https://www.fema.gov/sites/default/files/documents/fema\\_about-bcat-report\\_03-25-21.pdf](https://www.fema.gov/sites/default/files/documents/fema_about-bcat-report_03-25-21.pdf)



awareness, maintain and improve communication, expand training and organize or help facilitate exercise development related to building codes. The agency can collaborate with organizations such as the Federal Alliance for Safe Homes (FLASH), other federal agencies and SLTT governments to build upon existing efforts and help FEMA better advance its mission. FEMA can build the capability of external partners by:

- Providing grant assistance for SLTTs related to building codes;
- Providing training for key government employees at the SLTT level so they have the knowledge and experience to effectively adopt and continuously enforce building codes; and
- Developing building code inject templates, guidance and resources for use by SLTTs and other external partners by incorporating building codes into their exercises.

The agency can maintain and grow strong relationships with SLTT governments by listening and understanding their challenges to implementing codes and improving their capability to implement building code requirements and best practices for grant programs. As mentioned in the *2019 GAO-Disaster Resilience Framework* report, because much of the nation’s infrastructure is owned and operated by entities other than the federal government, conditions—in the form of federal regulatory requirements of federal financial assistance—can help promote investments in disaster risk reduction.<sup>15</sup>

Adopting strong codes and standards provides significant return on investment in the long run, but in the short-term, SLTTs often struggle with the cost and expense of adoption and enforcement. Federal incentives and other avenues for capability building are essential for expanding FEMA support for building codes to all communities and particularly underserved individuals and vulnerable communities.

## **Objective 2.4: Expand support to underserved individuals and vulnerable communities to increase resilience**

**Superior building performance nationwide will not be achieved without increased support to vulnerable communities.** Building capability across the nation requires consideration of underserved individuals, persons with disabilities and vulnerable communities.<sup>16</sup> FEMA recognizes that these communities are less likely to live in safe housing constructed according to modern building codes. Because of the prevalence of lower-quality housing among these communities, they are disproportionately impacted by natural disasters. Expanding FEMA support to these communities is critical to increasing resilience across the nation. Examples of support might include:

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<sup>15</sup> GAO-20-100SP, *Disaster Resilience Framework: Principles for Analyzing Federal Efforts to Facilitate and Promote Resilience to Natural Disasters* <https://www.gao.gov/assets/gao-20-100sp.pdf>

<sup>16</sup> Refer to Appendix C for definitions of vulnerable and underserved communities.

- Providing increased funding for building code upgrades so communities can better support stronger building code requirements and retrofitting of existing buildings;
- Reviewing Americans with Disabilities Act (ADA) compliance requirements that may be triggered through grant projects;
- Evaluating SLTT match requirements for low-income communities; and
- Focusing outreach, education and increased technical support for building code application, adoption and enforcement.

When vulnerable communities become more resilient through increased funding, local capacity, outreach, education, technical support and guidance by federal, state, local agencies and community partners, FEMA builds bridges with vulnerable communities and the nation becomes more resilient. As referenced in FEMA's *Guides to Expanding Mitigation* series, ensuring diversity, equity and inclusion in FEMA programs is an agency priority.<sup>17</sup>



## New Building Codes & Mitigation Investments, U.S. Virgin Islands

In 1995, after Hurricanes Luis and Marilyn damaged or destroyed more than 21,000 U.S. Virgin Islands (USVI) homes, FEMA granted about \$30 million through its Hazard Mitigation Grant Program (HMGP) to assist the islands' recovery. A portion of that grant funded the Home Protection Roofing Program, a vital element of the islands' post-disaster mitigation plan. More than 20 years later, in the wake of Hurricanes Irma and Maria, a FEMA Mitigation Assessment Team (MAT) visited the islands. One goal was to examine a sample of those roofs on St. Thomas to see how well they fared in the two latest hurricanes.

The result: **no structural damage was observed in homes with the new roof design.** Additionally, the team visited approximately 75 homes containing integral gutters, a mitigation effort to avoid what happened in 1995, when gutters broke loose and became destructive scythes. None of the new integral gutters broke loose. The integral gutters were not even damaged, the team reported.

Some members of the inspection team said they consider the greatest post-Marilyn accomplishment to be advancements in the U.S. Virgin Islands' building code. Prior to Marilyn, the code requirement for wind resistance was weak, but following FEMA's post-storm recommendation, the U.S. Virgin Islands adopted the 1994 Uniform Building Code, which required significantly more wind resistance. As a result, although Hurricanes Irma and Maria were more severe than Marilyn, buildings that were repaired or constructed under the 1994 code showed far less roof damage from Irma and Maria than structures built before 1994.

<sup>17</sup> Guides to Expanding Mitigation <https://www.fema.gov/about/organization/region-2/guides-expanding-mitigation>

## Goal 3: Drive Public Action on Building Codes



### Supporting Priorities & Desired Outcome

**Goal 3** is aligned to the **Messaging & Outreach** strategic theme and its associated priorities and key takeaways. Throughout the goal development process, FEMA staff reiterated the importance of practical, simple and informative communications. Specifically, FEMA program, regional and field offices called attention to the need for an increased understanding of codes and their value, the need for code adoption, implementation, enforcement and having FEMA speak with a consistent message about building codes.

**Outcome:** With expanded support for vulnerable communities and communities at greatest risk to climate change impacts, FEMA will advance partnerships to increase understanding and drive SLTT application, adoption and enforcement of building codes.

### Objective 3.1: Create unified, tailored, data-driven Agency messaging on building codes

**Unified messaging is a voice that leads to action.** Communications informed by data, organized by audience and unified in message will help FEMA focus its outreach and drive public action on building codes. Simple, unified messaging tailored to stakeholder needs provides FEMA staff and the public with a clear, cohesive and consistent understanding of relevant information such as:

- The importance of building codes and standards;
- Common buildings and their associated utility system vulnerabilities;
- More resilient development, zoning, planning and land use;
- The importance of building a strong culture around the value of building codes; and
- Building codes, mitigation measures, and best practices such as above code design that can improve building and community resilience before, during and after disasters.

Unified messaging also addresses the need for FEMA to communicate the critical relationship between building codes and floodplain management ordinances, while demonstrating the vital importance of code enforcement. Using the latest, most accurate data, in coordination with agency subject-matter experts, regional and HQ staff, FEMA can help tailor messaging according to context, audience type and stakeholder needs. Additionally, educating the building design and construction field about FEMA's programs and funding involving building code implementation, adoption and enforcement can reinforce stakeholder messaging and priorities.

Messaging is the key to capturing the public’s attention, raising awareness and driving action. It can also be used within existing partnerships to enhance, inform and promote FEMA building code messaging.

### **Objective 3.2: Leverage partnerships to promote FEMA building code messaging**

**Partnerships amplify messaging that drives action.** Existing partnerships provide FEMA with established, trusted and accessible channels for distributing tailored information that drives action. FEMA has access to varied communication channels, partnerships and platforms to disseminate building code messaging to a wide range of organizations, skill-sets and audiences. For example, the Resilient Nation Partnership Network, established by FEMA, is a network of organizations and individuals united to help communities take action and become more resilient.<sup>18</sup> The RNPN’s mission is to inform, educate and motivate communities to protect themselves from the loss of life, property and prosperity due to natural hazards. By leveraging channels like the RNPN, FEMA can:

- Coordinate messaging across channels and platforms;
- Target outreach to varied audiences; and
- Maximize audience reach and public understanding.

These channels, partnerships and platforms also provide a built-in feedback loop that the agency can use to further refine messaging to serve audiences better and ensure that messaging lasts beyond the disaster. This use of existing channels is not limited to the private sector or industry partners but can also include other federal agencies. Whether it is disaster, recovery, mitigation or preparedness grants in the disaster life cycle, infrastructure projects often fall under the purview of federal agencies. The U.S. Department of Housing and Urban Development (HUD) is an example of a federal agency that has coordinated with FEMA on needs assessments for grant programs, mitigation messaging and post-disaster assistance outreach. Along with existing engagements, FEMA will leverage federal partnerships to develop the forthcoming federal alignment on building codes.



#### **FEMA at Big Build 2019: Leveraging Partnerships to Bring Resilience Home**

To raise awareness about flooding risks, FEMA developed an interactive exhibit for the Big Build Community Day in October 2019, hosted by the National Building Museum (NBM). NBM hosts the annual event each fall to introduce youth to a wide range of building skills, including planning, design, architecture and construction.

FEMA components like the Risk Management Directorate (RMD), Individual and Community Preparedness Division and the Building Science Branch partnered to exhibit several hands-on

<sup>18</sup> Resilient Nation Partnership Network <https://www.fema.gov/business-industry/resilient-nation-partnership-network>

activities, including an interactive stream table, virtual reality, a coloring and activity station and a preparedness card game. Participating in this event provided FEMA with a unique opportunity to share essential messages on mitigation, preparedness and resilience.

### **Objective 3.3: Amplify climate science messaging to increase public demand for building codes and standards**

**Improving climate resilience messaging increases demand.** Tying building code messaging to the urgency of climate change helps demonstrate the value of strong building codes and standards to the public. Recent disasters and weather-related events have underscored the need for a greater understanding of the benefits of building codes, including code compliance, enforcement and higher standards. Building codes and standards are an essential tool to help safeguard communities in the face of natural hazards that are stronger and more frequent because of the effects of climate change.

FEMA can increase public interest, understanding and support for building codes and standards by:

- Leveraging existing channels, supporting and amplifying climate science messaging where appropriate;
- Conducting and sponsoring various types of studies and research into the impacts of climate change (see Objective 1.2) which are crucial for the development of effective messaging to increase public demand and drive action related to building codes, standards, higher land use standards and best practices; and
- Translating studies and research into enhanced programs to better understand and more effectively communicate the impacts of climate change and the importance of building codes for improving community resilience.

The agency continually strives to help communities address the impacts of climate change, particularly vulnerable communities that are often more severely impacted. Vulnerable communities most often suffer disproportionately during and after disasters and bear dangerous, costly and unnecessarily high levels of risk in the face of natural disasters. FEMA can better equip its partners to engage with communities before, during and after disasters by targeting data-driven building code application, adoption and enforcement outreach and resources to vulnerable communities.<sup>19</sup>

### **Objective 3.4: Target building code adoption and enforcement outreach to the most vulnerable communities**

**Targeted messaging for vulnerable communities advances equity and public action.** Developing and distributing intelligent, personable, data-driven messaging to FEMA program, regional and field offices enables them to readily communicate with a wide range of stakeholders before, during and

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<sup>19</sup> Refer to Appendix C for definitions of vulnerable and underserved communities.

after disasters. FEMA recognizes that communication is a two-way process, and the agency is also focused on receiving feedback from these communities to understand their unique challenges. Regional and field office staff are a key part of that feedback gathering process, as they are in the best position to ascertain the situation on the ground and develop meaningful solutions. FEMA can target building code application, adoption, enforcement and best practices outreach to the most vulnerable communities by disseminating:

- Studies and research findings that support the public’s improved understanding of the impact and value of building codes and standards to address and prepare for the effects of climate change (see Objective 1.2);
- Messaging that elevates and promotes FEMA policies, programs and best practices that support community resilience before, during and after disasters (see Objective 1.5); and
- Resources, tools and guidance highlighting funding for retrofitting existing buildings, accessibility requirements and technical support for building code adoption and enforcement (see Objective 2.4).

The Strategy is especially focused on effective communication with vulnerable communities, who may have limited access to information and building code-related resources such as retrofit opportunities, technical guidance and requirements for FEMA programs. This objective fulfills and reflects a consistent request from partners and FEMA components for messaging that they can easily share to support updating and adopting codes. FEMA can help drive public action on building codes through intentional data-driven messaging that is accessible to vulnerable communities, and targeted outreach that involves vulnerable populations in planning processes.



### Using FEMA Assistance Opportunities to Advance Building Codes

FEMA programs assist communities with adoption and enforcement of building codes. One example is the villages of Alatna, Levelock, and Shungnak in Alaska which submitted sub applications for Resilient Building Code Implementation through FEMA’s Building Resilient Infrastructure and Communities grant program for FY 2020. The villages were able to obtain support for building code implementation through Tribal Set-aside funds.

## Conclusion

The need for hazard-resistant building codes is more urgent than ever before. Natural hazard frequency and adverse impacts are worsening due to climate change and there is clear evidence that the most vulnerable communities live in lower-quality, less resilient housing. At the same time, research shows that the adoption and enforcement of the latest building codes is a cost-effective way to save lives and protect property, with \$11 saved for every \$1 invested relative to 1990 standard. Unfortunately, only one-third of American states and communities have adopted the two most recent versions of disaster-resistant building codes without significantly amending their requirements, despite this remarkable return on investment.

FEMA has an essential role to play in promoting, messaging and supporting the application, development and enforcement of strong hazard-resistant building codes and standards and best practices for improved community resilience. This FEMA Building Codes Strategy represents a comprehensive, unified and exciting new vision for incorporating building codes and standards across FEMA programs and operations.

The Strategy's three goals and 14 objectives are ambitious, yet grounded, measurable and achievable. They are also mutually reinforcing. Achievements in "Drive Public Action on Building Codes" (Goal 3) will help "Strengthen Nationwide Capability for Superior Building Performance" (Goal 2) and vice versa. Success in "Integrate Building Codes and Standards" (Goal 1) is the essential first step toward achieving both Goal 2 and Goal 3. Together, the three goals present a roadmap to an agency with a renewed and strengthened focus on the application, adoption and enforcement of building codes and standards. As detailed instructions for this roadmap, the Implementation Plan will provide guidance on the steps, processes and activities needed to accomplish the Strategy's goals and objectives.

This Strategy also serves as the foundation and blueprint for future efforts to increase building code application, adoption and enforcement across the nation. Building on the success and momentum of this Strategy, FEMA will collaborate and coordinate with federal partners for the development of a federal alignment on building codes, followed by national implementation. Ultimately, these efforts will form a comprehensive strategic plan that will link FEMA, other federal agencies, SLTT governments and stakeholders nationwide to pursue a shared vision: **A resilient nation with superior building performance in disasters.**

## APPENDIX A: Acronyms

ADA	Americans with Disabilities Act
APG	Annual Planning Guidance
ATC	Applied Technology Council
BCAT	Building Code Adoption Tracking
BCESG	Building Codes Enterprise Steering Group
BCWG	Building Codes Work Group
BRIC	Building Resilient Infrastructure and Communities
DHS	Department of Homeland Security
DRRA	Disaster Recovery Reform Act of 2018
FEMA	Federal Emergency Management Agency
FIMA	Federal Insurance and Mitigation Administration
FLASH	Federal Alliance for Safe Homes
FY	Fiscal Year
GAO	U.S. Government Accountability Office
GIS	Geographic Information System
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HQ	FEMA Headquarters
HUD	U.S. Department of Housing and Urban Development
IBC	International Building Code
ICC	International Code Council
IRC	International Residential Code



MAT	Mitigation Assessment Team
MFPD	Montecito Fire Protection District
NAC	National Advisory Council
NBM	National Building Museum
NDRF	National Disaster Recovery Framework
NFIP	National Flood Insurance Program
NGOs	Non-governmental Organizations
NIBS	National Institute of Building Sciences
NIST	National Institute of Standards and Technology
NMIS	National Mitigation Investment Strategy
NOAA	National Oceanic and Atmospheric Administration
NTTAA	National Technology Transfer and Advancement Act
OMB	Office of Management and Budget
PA	Public Assistance
RMD	Risk Management Directorate (FIMA)
RNPN	Resilient Nation Partnership Network
S&T	Science and Technology Directorate (DHS)
SLTT	State, Local, Tribal, Territorial
USFA	U.S. Fire Administration
USVI	U.S. Virgin Islands

# APPENDIX B: Building Codes Strategy Foundations

## FEMA STRATEGIC DOCUMENTS

This Strategy is built on numerous existing strategic documents. For example, the *2022-2026 FEMA Strategic Plan*, Objective 2.2, emphasizes the importance of disaster-resistant building codes, stating that “advancing disaster resistant building codes through FEMA policies, programs, guidance, communications, and partnerships with state and local code officials are critical steps toward achieving a resilient nation.”<sup>20</sup> Additionally, the *CY22 FEMA Administrator’s Annual Planning Guidance (APG)* directs the Climate Adaptation ESG, in partnership with the Building Codes Enterprise Steering Group, to coordinate across the agency to promote and support community resilience and sustainability through codes and standards updates, adoption, and adherence. The *2019 National Mitigation Investment Strategy (NMIS)* explicitly outlines the need for national investment in “Building and updating structures to the latest codes and standards,” and the *2016 National Disaster Recovery Framework* calls for adopting and enforcing building codes and standards in the mitigation and recovery stages of the disaster lifecycle.<sup>21,22</sup>

## FEDERAL LEGISLATION & POLICIES

In addition to these strategic documents, congressional legislation and several agency and federal policies and programs promote disaster-resistant building codes and provide guidance for standards development. *FEMA Policy 204-078-2, Disaster Risk Reduction Minimum Codes and Standards*, encouraged the consistent adoption of building codes and standards across FEMA programs.<sup>23</sup> Further, the *Disaster Recovery Reform Act of 2018 (DRRA)* authorized FEMA to provide funding and support for repair and reconstruction to the latest codes and standards pre- and post-disaster, including code adoption and enforcement activities (Sec. 1206, 1234 and 1235(b)).<sup>24</sup> In addition, the *Federal Fire Prevention and Control Act of 1974*, which established the U.S. Fire Administration (USFA), authorized the federal government to continue working with SLTT governments and the fire service community to further the promotion of national voluntary consensus-based codes, specifications and standards that increase firefighter safety.<sup>25</sup>

Although the primary focus is on building codes that decrease the impact of natural disasters, this Strategy recognizes the importance of other codes and standards such as the Americans with Disabilities Act (ADA) that have significant positive impacts on the built environment. For example, the 2010 ADA Standards for Accessible Design are required when a facility is altered or newly

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<sup>20</sup> 2022-2026 Strategic Plan [https://www.fema.gov/sites/default/files/documents/fema\\_2022-2026-strategic-plan.pdf](https://www.fema.gov/sites/default/files/documents/fema_2022-2026-strategic-plan.pdf)

<sup>21</sup> National Mitigation Investment Strategy [https://www.fema.gov/sites/default/files/2020-10/fema\\_national-mitigation-investment-strategy.pdf](https://www.fema.gov/sites/default/files/2020-10/fema_national-mitigation-investment-strategy.pdf)

<sup>22</sup> National Disaster Recovery Framework [https://www.fema.gov/sites/default/files/2020-06/national\\_disaster\\_recovery\\_framework\\_2nd.pdf](https://www.fema.gov/sites/default/files/2020-06/national_disaster_recovery_framework_2nd.pdf)

<sup>23</sup> FEMA Policy 204-078-2, Disaster Risk Reduction Minimum Codes and Standards <https://www.iccsafe.org/wp-content/uploads/FP-204-078-2.pdf>

<sup>24</sup> Disaster Recovery Reform Act of 2018 <https://www.fema.gov/disasters/disaster-recovery-reform-act-2018>

<sup>25</sup> Federal Fire Prevention and Control Act of 1974, <https://www.govinfo.gov/content/pkg/STATUTE-88/pdf/STATUTE-88-Pg1535.pdf#page=1>

constructed – which means that, through enforcement of these standards, SLTTs have impactful and frequent opportunities to make their communities more accessible than ever before.<sup>26</sup>

FEMA Policy 104-009-11, *Consensus-Based Codes, Specifications and Standards for Public Assistance*, requires the use of the latest consensus-based codes in any relevant project funded by Public Assistance under the authority of DRRA Sec.<sup>27</sup> 1235(b), including but not limited to, the latest published editions of codes from nationally recognized authorities such as the International Code Council. Building codes efforts are also supported by legislation addressing greater coordination and consistency across federal agencies. The National Technology Transfer and Advancement Act (NTTAA) directs federal agencies to adopt voluntary consensus standards wherever possible – avoiding the development of unique government standards—and establishes reporting requirements.<sup>28</sup>

OMB Circular A-119, revised by the Office of Management and Budget (OMB) in January 2016, establishes instructions for developing standards across the federal government.<sup>29</sup> It promotes agency participation on standards bodies, specifies reporting requirements on conformity assessment activities and informs agencies of their statutory obligations related to standards setting.

## FEMA-COMMISSIONED REPORTS

FEMA-commissioned reports informed the Strategy as well. The *National Advisory Council (NAC)*, a 35-member advisory board to the Administrator, released its *2019 Report* which highlighted the lack of code adoption nationwide, stating that **67% of high-risk communities lack the most up-to-date building codes**.<sup>30</sup> The NAC emphasized **raising public awareness** as the solution to address this gap. Recommendations to FEMA included raising awareness of the consequences of weak codes; building strong partnerships with external stakeholders to communicate the importance of modern codes; requiring building code compliance for FEMA grant programs; and modernizing the minimum building standards of the NFIP to reflect the latest consensus model codes and flood standards.

In 2015, The Applied Technology Council (ATC), a nonprofit research organization, released its report, *ATC 117 Strategies to Encourage State and Local Adoption of Disaster-Resistant Codes and Standards to Improve Resiliency*, which emphasized the importance of federal leadership and unity in promoting code compliance across the nation, starting with FEMA.<sup>31</sup> The ATC report identified

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<sup>26</sup> 2010 ADA Standards for Accessible Design [https://www.ada.gov/2010ADASTandards\\_index.htm](https://www.ada.gov/2010ADASTandards_index.htm)

<sup>27</sup> FEMA Policy 104-009-11, *Consensus-Based Codes, Specifications and Standards for Public Assistance* [https://www.fema.gov/sites/default/files/2020-05/DRRA1235b\\_Consensus\\_BasedCodes\\_Specifications\\_and\\_Standards\\_for\\_Public\\_Assistance122019.pdf](https://www.fema.gov/sites/default/files/2020-05/DRRA1235b_Consensus_BasedCodes_Specifications_and_Standards_for_Public_Assistance122019.pdf)

<sup>28</sup> National Technology Transfer and Advancement Act <https://www.nist.gov/standardsgov/national-technology-transfer-and-advancement-act-1995>

<sup>29</sup> OMB Circular A-119 [https://www.nist.gov/system/files/revised\\_circular\\_a-119\\_as\\_of\\_01-22-2016.pdf](https://www.nist.gov/system/files/revised_circular_a-119_as_of_01-22-2016.pdf)

<sup>30</sup> National Advisory Council Report to the FEMA Administrator [https://www.fema.gov/sites/default/files/2020-08/fema\\_nac-report\\_11-2019.pdf](https://www.fema.gov/sites/default/files/2020-08/fema_nac-report_11-2019.pdf)

<sup>31</sup> ATC 117: Strategies to encourage state and local adoption of disaster-resistant codes and standards to improve resiliency [https://content.aia.org/sites/default/files/2016-04/Res-Encourage-State-Local-Disaster-Codes-Standards\\_0.pdf](https://content.aia.org/sites/default/files/2016-04/Res-Encourage-State-Local-Disaster-Codes-Standards_0.pdf)

several opportunities to use existing federal programs and regulations to coordinate, promote and in some cases require the adoption of building codes in areas at higher risk from natural hazards.

Finally, in response to Section 100235 of the Biggert-Waters Flood Insurance Reform Act of 2012, FEMA provided Congress with a report on the inclusion of building codes in the National Flood Insurance Program in 2013.<sup>32</sup> The report found that the overall impacts of including building codes as part of the NFIP **would be positive in helping to reduce physical flood and other hazard losses, which would in turn positively affect the land use planning and regulatory climate.**

## **FEMA PARTNER STUDIES**

In addition, the Strategy draws on the results of building code studies conducted by FEMA and partner organizations, including the previously mentioned *Natural Hazard Mitigation Saves Report* in 2019 and the 2020 *Building Codes Save* study.<sup>33,34</sup> That latter study projected that, given an average of 577,000 new buildings per year, with 70% constructed according to I-Codes or similar codes, the U.S. will save \$132 billion in losses from natural disasters between 2016 and 2040. FLASH conducted the Building Code Consumer Awareness Research and Outreach Project in 2019, which illustrates why there is still an enormous gap in code adoption and enforcement.<sup>35</sup> The FLASH study found that eight of ten respondents assumed they were protected by building codes, even though only one-third of U.S. communities have adequate codes in place to protect against disasters. Upon learning of the disparity, 84% expressed deep and troubling concern.

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<sup>32</sup> Including Building Codes in the National Flood Insurance Program, FY 2013 Report to Congress [http://www.coalition4safety.org/resources/FEMA\\_Incl\\_Bldg\\_Codes\\_NFIP2.pdf](http://www.coalition4safety.org/resources/FEMA_Incl_Bldg_Codes_NFIP2.pdf)

<sup>33</sup> Natural Hazard Mitigation Saves <https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report>

<sup>34</sup> Building Codes Save: A Nationwide Study [https://www.fema.gov/sites/default/files/2020-11/fema\\_building-codes-save\\_study.pdf](https://www.fema.gov/sites/default/files/2020-11/fema_building-codes-save_study.pdf)

<sup>35</sup> FLASH Building Code Consumer Awareness Research and Outreach Project <http://newsroom.flash.org/commentary/why-americans-arent-concerned-about-building-codes-even-though-they-should-be.htm>

## APPENDIX C: Definitions of Key Terms

1. **Building Codes:** “Building codes” refers to the set of published editions of codes, specifications and standards, including relevant hazard-resistant provisions, which were developed by voluntary consensus standards bodies, to protect public health and safety.
2. **Climate Change:** Changes in average weather conditions that persist over multiple decades or longer. Climate change encompasses both increases and decreases in temperature, as well as shifts in precipitation, changing risk of certain types of severe weather events, and changes to other features of the climate system (National Climate Assessment 2014). Climate change has been identified by the Department of Defense as a critical national security threat and threat multiplier (The White House 2021). The scientific community has made clear that the scale and speed of necessary action is greater than previously believed (EO 14008). Responding to the climate crisis will require both significant short-term global reductions in greenhouse gas emissions and net-zero global emissions by mid-century or before (EO 14008).
3. **Community Resilience:** The ability to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions (PPD-21, NIST 2016).
4. **Consensus Standard:** A type of standard developed or adopted by voluntary consensus standards bodies through the use of a voluntary consensus standards development process that includes the following attributes or elements: openness, balance, due process, appeal process, and consensus. The voluntary consensus standards body is a type of association, organization, or technical society that plans, develops, establishes, or coordinates voluntary consensus standards (OMB Circular A-119).
5. **Equity:** Equity is the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities [...] that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life (FEMA 2021).
6. **Underserved Communities:** Communities often characterized by increased vulnerabilities that influence their ability to prepare, respond, cope, or recover from an event. These characteristics often overlap within populations to create heightened vulnerability, which may be compounded by deficiencies in infrastructure within communities (FEMA 2020). They share a particular characteristic, as well as geographic communities, that have been systematically denied full opportunity to participate in aspects of economic, social and civic life (EO 13985). Individuals who belong to underserved communities that have been denied such treatment, include Black, Latino, and Indigenous and Native American persons, Asian Americans and Pacific Islanders and other persons of color; members of religious minorities; lesbian, gay, bisexual, transgender, and queer (LGBTQ+) persons; persons with disabilities; persons who live in rural areas; and persons otherwise adversely affected by persistent poverty and inequality (EO 13985). They include disadvantaged communities that have been historically marginalized and overburdened by pollution and underinvestment in housing, transportation, water and wastewater infrastructure

and healthcare ([EO 14008](#), [Justice40 2021](#)). Not all populations that are vulnerable in the face of natural disasters are underserved but all underserved communities are vulnerable.

7. **Vulnerable Communities:** Vulnerable communities most often suffer disproportionately during and after disasters. They experience heightened risk and increased sensitivity to climate change and have less capacity and fewer resources to cope with, adapt to or recover from climate impacts. These disproportionate effects are caused by physical (built and environmental), social, political and/or economic factor(s), which are exacerbated by climate impacts ([FEMA 2020](#)). They also include underserved communities.

# APPENDIX D: Examples of Common Building Codes, Specifications and Standards

## Document Usage

The table below contains applicable codes, specifications and standards that are commonly used for non-residential buildings and structures as well as residential buildings. This table is an example of codes, specifications and standards that can be referenced to guide project design. Building codes incorporate, through reference, hundreds of unique specifications and standards. Buildings are comprised of unique structural and non-structural components and this table may not address every required code, specification or standard.

Organizations	Common Codes, Specifications and Standards
International Code Council (ICC)	<ul style="list-style-type: none"> <li>▪ International Building Code (IBC) –Chapter 35 provides a complete list of referenced standards and specifications</li> <li>▪ International Residential Code for One- and Two-Family Dwellings (IRC)</li> <li>▪ International Existing Building Code (IEBC)</li> <li>▪ International Plumbing Code (IPC)</li> <li>▪ International Mechanical Code (IMC)</li> <li>▪ International Fuel Gas Code (IFGC)</li> <li>▪ International Fire Code (IFC)</li> <li>▪ International Swimming Pool and Spa Code (ISPSC)</li> <li>▪ International Wildland-Urban Interface Code (IWUIC)</li> </ul>
Other Nationally Recognized Codes	<ul style="list-style-type: none"> <li>▪ Guidelines for Design and Construction of Hospitals and Outpatient Facilities (FGI)</li> <li>▪ Guidelines for Design and Construction of Residential Health, Care and Support Facilities (FGI)</li> <li>▪ Fire Code (NFPA 1)</li> <li>▪ National Electrical Code (NFPA 70)</li> <li>▪ National Fire Alarm and Signaling Code (NFPA 72)</li> <li>▪ Life Safety Code (NFPA 101)</li> <li>▪ Building Construction and Safety Code (NFPA 5000)</li> </ul>
Standards Promulgated by the ICC	<ul style="list-style-type: none"> <li>▪ Standard for the Design and Construction of Storm Shelters (ICC/NSSA 500)</li> <li>▪ Standard for Residential Construction in High Wind Regions (ICC 600)</li> </ul>
American Iron and Steel Institute (AISI)	<ul style="list-style-type: none"> <li>▪ North American Specification for the Design of Cold-formed Steel Structural Members (AISI S100)</li> <li>▪ North American Standard for Seismic Design of Cold-Formed Steel Structural Systems (AISI S400)</li> </ul>

Organizations	Common Codes, Specifications and Standards
Air Movement and Control Association International (AMCA)	<ul style="list-style-type: none"> <li>▪ Test Method for Louvers Impacted by Wind Borne Debris (AMCA 540)</li> </ul>
American Society of Civil Engineers (ASCE)	<ul style="list-style-type: none"> <li>▪ Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7)</li> <li>▪ Flood Resistant Design and Construction (ASCE/SEI 24)</li> <li>▪ Seismic Evaluation and Retrofit of Existing Buildings (ASCE/SEI 41)</li> <li>▪ Wind Tunnel Testing for Buildings and Other Structures (ASCE/SEI 49)</li> </ul>
American Society of Testing and Materials (ASTM)	<ul style="list-style-type: none"> <li>▪ Test Method for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials (ASTM E1886)</li> <li>▪ Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes (ASTM E1996)</li> </ul>
American Concrete Institute (ACI)	<ul style="list-style-type: none"> <li>▪ Building Code Requirements for Reinforced Concrete (ACI 318),</li> <li>▪ Guide to Design, Manufacture and Installation of Concrete Piles (ACI 543R)</li> </ul>
American Institute of Steel Construction (AISC)	<ul style="list-style-type: none"> <li>▪ Code of Standard Practice for Steel Buildings and Bridges (ANSI/AISC 303)</li> <li>▪ Specification for Structural Steel Buildings (ANSI/AISC 360)</li> <li>▪ Seismic Provisions for Structural Steel Buildings (ANSI/AISC 341)</li> </ul>
American National Standards Institute (ANSI)	<ul style="list-style-type: none"> <li>▪ Flood Abatement Equipment Test Standard (ANSI 2510)</li> <li>▪ Specification for the Design, Testing, and Utilization of Industrial Steel Storage Racks (ANSI MH 16.1-04)</li> </ul>
American Wood Council (AWC)	<ul style="list-style-type: none"> <li>▪ National Design Specification for Wood Construction (ANSI/AWC NDS)</li> <li>▪ Special Design Provisions for Wind and Seismic (SDPWS)</li> </ul>
Door and Access Systems Manufacturers Association (DASMA)	<ul style="list-style-type: none"> <li>▪ Standard Method for Testing Sectional Garage Doors, Rolling Doors and Flexible Doors: Determination of Structural Performance Under Uniform Static Air Pressure Difference (DASMA 108)</li> <li>▪ Standard Method for Testing Sectional Garage Doors, Rolling Doors and Flexible Doors: Determination of Structural Performance Under Missile Impact and Cyclic Wind Pressure (DASMA 115)</li> </ul>
National Fire Protection Association (NFPA)	<ul style="list-style-type: none"> <li>▪ Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural and Suburban Areas (NFPA 1141)</li> <li>▪ Standard on Water Supplies for Suburban and Rural Firefighting (NFPA 1142)</li> <li>▪ Standard for Wildland Fire Management (NFPA 1143)</li> <li>▪ Standard for Reducing Structure Ignition Hazards from Wildland Fire (NFPA 1144)</li> </ul>

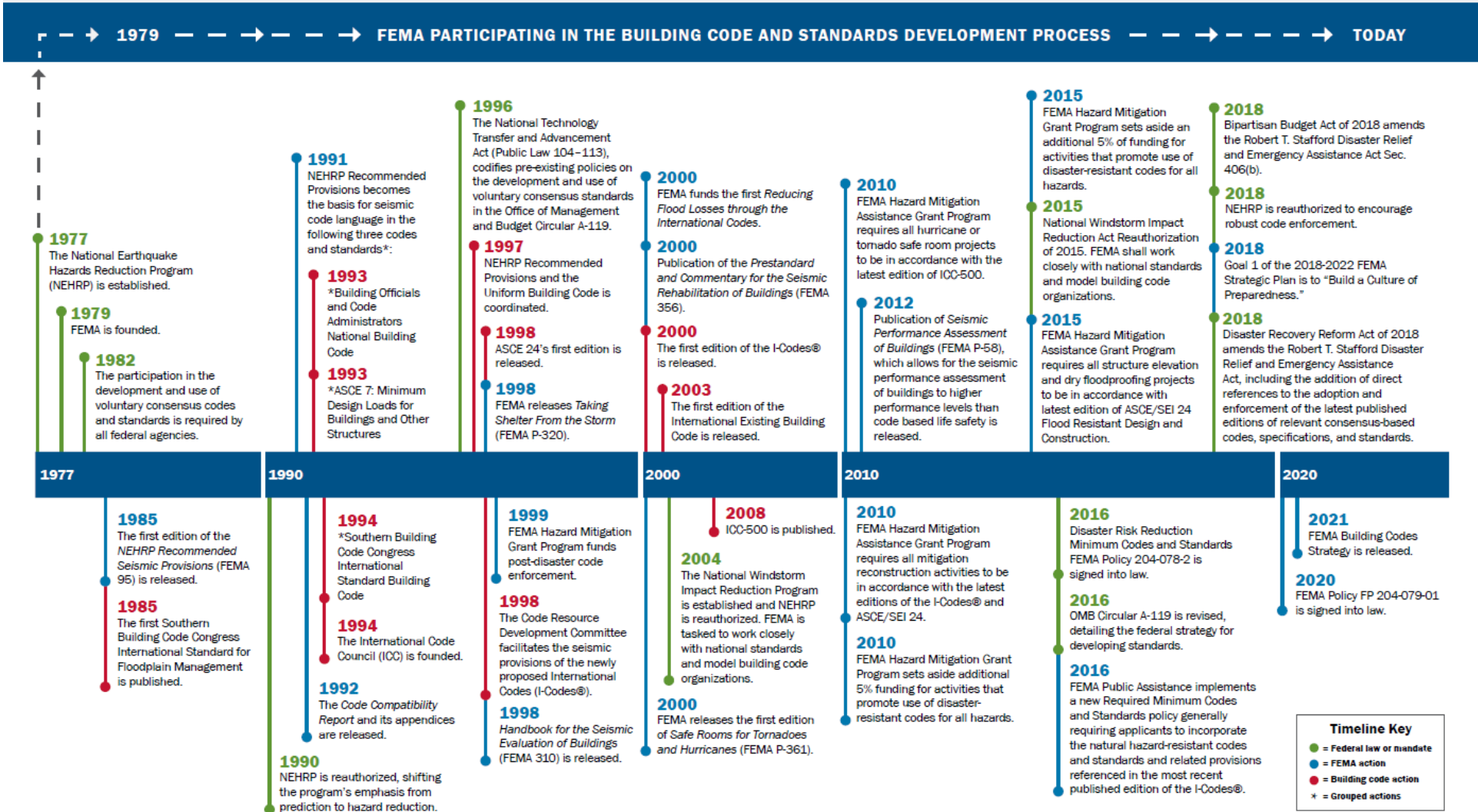


<b>Organizations</b>	<b>Common Codes, Specifications and Standards</b>
Steel Joist Institute (SJI)	<ul style="list-style-type: none"> <li>▪ Standard Specification Load Tables and Weight Tables for Steel Joists and Joist Girders K-Series, Series, DHL-Series, Joist Girders (SJI 100)</li> <li>▪ Standard Specification for Composite Steel Joists, CJ-Series (SJI 200)</li> </ul>
The Masonry Society (TMS)	<ul style="list-style-type: none"> <li>▪ Building Code for Masonry Structures (TMS 402)</li> <li>▪ Specification for Masonry Structures (TMS 602)</li> </ul>

# APPENDIX E: Building Codes Timeline



## Timeline of FEMA Policies and Regulations Related to Building Codes and Standards



- **1977**  
The [Earthquake Hazards Reduction Act of 1977 \(Public Law 95-124\)](#) established the National Earthquake Hazards Reduction Program. Program objectives include the development, publication, and promotion of model building codes to address seismic risk.
- **1979**  
President Jimmy Carter signed [Executive Order 12148](#), creating FEMA.
- **1982**  
[Office of Management and Budget \(OMB\) Circular A-119](#) requires federal agencies to use available building codes and standards when possible and encourages agencies to participate in the code and standards development process.
- **1985**  
FEMA releases [FEMA 95](#), the first edition of the [NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings](#).
- **1985**  
The Southern Building Code Congress published the first iteration of their [model codes](#).
- **1990**  
The National Earthquake Hazards Reduction Program Reauthorization Act of 1990 (Public Law 101-614) instructed FEMA to promote the implementation of earthquake hazard reduction measures by federal, state, and local governments as well as national standards and model building code organizations.
- **1991**  
The [1991 edition of the NEHRP Recommended Provisions](#) was used as the basis for the three following codes & standards\*:  
● **1993**  
\*Building Officials and Code Administrators National Building Code  
● **1993**  
\*ASCE 7: Minimum Design Loads for Buildings and Other Structures  
● **1994**  
\*Southern Building Code Congress International Standard Building Code
- **1992**  
The [Code Compatibility Report](#) (FEMA 296, 297, 298) is released by FEMA. This study worked towards eliminating incompatibilities between National Flood Insurance Program technical guidance and model codes & standards.
- **1994**  
The International Code Council is founded and charged to develop a single set of nationally applicable building codes.
- **1996**  
The National Technology Transfer and Advancement Act (NTTAA) ([Public Law 104-113](#)), codified pre-existing policies on the development and use of voluntary consensus standards in OMB Circular A-119.
- **1997**  
NEHRP Recommended Provisions and the Uniform Building Code were coordinated and became a prerequisite to the formation of the 2000 International Building Code and served as the basis for the seismic code language found in the first editions of the International Codes.
- **1998**  
FEMA and the National Institute of Building Sciences formed the Code Resource Development Committee, which facilitated the seismic provisions of the newly proposed International Building Code and International Residential Code.
- **1998**  
ASCE 24's first edition is released, providing design standards for buildings and structures in flood hazard areas.
- **1998**  
FEMA releases the first edition to [Taking Shelter From the Storm](#) (FEMA P-320). This publication provides basic safe room information and construction drawings for site-built safe rooms.
- **1998**  
FEMA releases FEMA 310, [Handbook for Seismic Evaluation of Buildings](#).
- **1999**  
FEMA Hazard Mitigation Grant Program funds are made available to support post-disaster code enforcement. Specifically, extraordinary post-disaster code enforcement costs may be eligible. Funding is available for projects designed to support the post-disaster rebuilding effort by ensuring that sufficient expertise is on hand to ensure appropriate codes and standards, including NFIP local ordinance requirements, are used and enforced.
- **2000**  
Publication of FEMA 356, [Prestandard and Commentary for the Seismic Rehabilitation of Buildings](#), which later became ASCE 41 Standard for Seismic Rehabilitation of Existing Buildings.
- **2000**  
ASCE releases the FEMA-funded [Reducing Flood Losses through the International Codes](#). Subsequent editions are jointly authored by ICC and FEMA and helps state and local officials integrate the I-Codes® into their current floodplain management regulatory processes related to codes with structures, buildings, and other development in special flood hazard areas in order to meet the requirements to participate in the National Flood Insurance Program.
- **2000**  
The first nationally-applicable, voluntary, minimum [consensus model codes](#) published by the International Code Council as the International Codes® - International Building Code, International Residential Code, etc.
- **2000**  
FEMA releases the first edition of [Safe Rooms for Tornadoes and Hurricanes](#) (FEMA P-361) which outlines the criteria for a safe room.
- **2003**  
The first edition of the [International Existing Building Code](#) is introduced to the I-Codes® series. The code encourages the use and reuse of existing buildings. It covers repair, alteration, addition, and change of occupancy for existing buildings and historical buildings.
- **2004**  
The [National Windstorm Impact Reduction Act](#) establishes the National Windstorm Impact Reduction Program and National Earthquake Hazards Reduction Program is reauthorized. FEMA is tasked to work closely with national standards and model building code organizations.
- **2008**  
ICC-500 is published by the International Code Council and provides the minimum requirements to safeguard public health, safety, and general welfare relative to the design, construction, and installation of storm shelters constructed for protection from high winds associated with tornadoes and hurricanes.
- **2010**  
FEMA Hazard Mitigation Assistance Grant Program requires all [hurricane or tornado safe room projects to be in accordance with latest edition of ICC-500](#).
- **2010**  
FEMA Hazard Mitigation Assistance Grant Program requires all [mitigation reconstruction activities must be completed in accordance with the latest editions of the I-Codes® and ASCE/SEI 24](#).
- **2010**  
FEMA Hazard Mitigation Grant Program sets aside [additional 5% initiative includes evaluation of model building codes](#).
- **2012**  
Publication of [Seismic Performance Assessment of Buildings](#) (FEMA P-58), which allows for the seismic performance assessment of buildings to higher performance levels than code based life safety.
- **2015**  
[FEMA Hazard Mitigation Grant Program](#) sets aside an additional 5% of funding for activities that promote use of disaster-resistant codes for all hazards. FEMA's intention in supporting the adoption and enforcement of building codes is to promote resilience by using disaster-resistant practices. A building is considered disaster resistant when it not only protects its occupants but can also be quickly repaired and re-occupied because damage from natural disasters is minimized.
- **2015**  
[National Windstorm Impact Reduction Act Reauthorization of 2015 \(Public Law 114-52\)](#) requires FEMA to work closely with national standards and model building code organizations, in conjunction with the National Institute of Standards and Technology, to promote the implementation of research results and better building practices within the building design and construction industry, including architects, engineers, contractors, builders, and inspectors.
- **2015**  
[FEMA Hazard Mitigation Assistance Grant Program](#) requires all structure elevation and dry floodproofing projects to be in accordance with latest edition of ASCE/SEI 24 Flood Resistant Design and Construction.
- **2016**  
[OMB Circular A-119](#) is revised, detailing the federal strategy for developing standards. Agencies are encouraged to participate on standards bodies while specifying reporting requirements on conformity assessment activities. Additionally, it informs agencies of their statutory obligations related to standards setting.
- **2016**  
Disaster Risk Reduction Minimum Codes and Standards [FEMA Policy 204-078-2](#) is signed on 6 September 2016 by Administrator Fugate. For first time, FEMA has an [agency-wide policy on minimum building codes and standards](#).
- **2016**  
[FEMA Public Assistance](#) implements a new Required Minimum Codes and Standards policy generally requiring applicants to incorporate the natural hazard-resistant codes and standards and related provisions referenced in the most recent published edition of the I-Codes®.
- **2018**  
Under the [Bipartisan Budget Act of 2018](#), the President may provide incentives to a state or tribal government to invest in measures that increase readiness for, and resilience from, a major disaster by recognizing such investments through a sliding scale that increases the minimum Federal share to 85%. Such measures may include - (iii) encouraging the adoption and enforcement of the latest published editions of relevant consensus-based codes, specifications, and standards that incorporate the latest hazard-resistant designs and establish minimum acceptable criteria for the design, construction, and maintenance of residential structures and facilities that may be eligible for assistance under this Act for the purpose of protecting the health, safety, and general welfare of the buildings' users against disasters.
- **2018**  
[NEHRP Reauthorization of 2018 \(Public Law 115-307\)](#) expands activities to include: (1) gathering information on community resilience (i.e., the ability of a community to prepare for, recover from, and adapt to earthquakes); (2) publishing a systematic set of maps of active faults and folds, liquefaction susceptibility for earthquake-induced landslides, and other seismically induced hazards; and (3) continuing the development of the Advanced National Seismic System, including earthquake early warning capabilities.
- **2018**  
Disaster Recovery Reform Act (DRRA) of 2018. DRRA Sections [1206](#), [1234](#), [1235\(b\)](#) amend the Stafford Act and include references to the adoption and enforcement of the latest published editions of relevant consensus-based codes, specifications, and standards.

**2018**

Goal #1 in the [FEMA Strategic Plan 2018-2022](#) is to Build a Culture of Preparedness and includes Objective 1.1 to Incentivize Investments that Reduce Risk, Including Pre-disaster Mitigation, and Reduce Disaster Costs at All Levels, which states: "FEMA will continue to work directly with SLTT and non-governmental partners to advocate for the adoption and enforcement of modern building and property codes. Disaster resilience starts with building codes, because they enhance public safety and property protection. Furthermore, FEMA will encourage robust code enforcement, providing education and training when needed to help convey the value of standardized, up-to-date building codes."

**2020**

Building Code and Floodplain Management Administration and Enforcement ([FEMA Policy FP-204-079-01](#)) was signed and it defines the framework and requirements for consistent and appropriate implementation of section 1206 of DRRRA through the PA Program.

**2022**

FEMA Building Codes Strategy is released, acting as the blueprint for organizing and advancing FEMA's building code efforts over the next several years to help people before, during and after disasters.