



## **THE COMMUNITY RESILIENCE BENCHMARKS® (CRB™)**

The Alliance for National & Community Resilience (ANCR) is developing Community Resilience Benchmarks® (CRB™). The CRBs will help communities assess their resilience and point them toward practical action they can take to become more resilient. The CRBs are organized around the concept of a whole community that relies on 19 functional areas to deliver essential services. These functional areas have their own resilience, but taken together represent the resilience of the community.

The benchmarks for each functional area are structured around requirements (actions, plans, policies, etc.) identified as crucial to resilience within the functional area. The requirements associated with any given aspect of the functional area are organized across three tiers: Essential, Enhanced, and Exceptional. Each “higher” tier demands a greater level of community commitment, investment, and/or engagement to achieve and presumably will have greater impact on enhancing community resilience. Within each Benchmark requirement, to meet the Enhanced or Exceptional benchmark all the requirements of the Essential, or Essential and Enhanced benchmarks, respectively, must also be demonstrated as well.

In this pilot phase, the benchmarks are intended to provide communities with a mechanism to evaluate their current state of resilience and to identify potential actions they can take to improve resilience. As a system, the CRB process is intended to be managed under the direction of a community leader with the functional area benchmarks evaluated by personnel with day-to-day responsibility in each functional area.

Acceptable Evidence and Commentary are provided for each of the Benchmark requirements to assist the user in understanding the overall purpose of the requirement and some of the means for demonstrating achievement. In some cases, the community may have identified or implemented strategies that meet the intent of the requirement but may not fit with the identified acceptable evidence. The community should document this alternative approach or evidence.

The individual benchmarks were developed based on initial work by Dr. John Plodinec, further enhanced through the engagement of subject matter experts and were approved by the ANCR Board of Directors. Lessons learned from this pilot phase will be incorporated into future versions of this benchmark and into the development of other benchmarks.

### **CRB Glossary**

- **Community** - A place designated by geographical boundaries that functions under the jurisdiction of a governance structure, such as a town, city, or county. In some instances, organizations may be considered communities and make use of the tool from their perspective--this includes campuses or corporations.
- **Continuity of Operations Plan (COOP) or Disaster Recovery Plan (DRP)** - A COOP or DRP is a formalized document describing how the organization’s functions can continue or resume quickly following a disaster. It is imperative that organizations not only develop a COOP or DRP but also test it, train personnel and document it properly before a real disaster occurs. The National Continuity Policy Implementation Plan (NCPPIP) and the National

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Security Presidential Directive 51/Homeland Security Presidential Directive 20 (NSPD-51/HSPD-20) define a COOP in the context of the federal government as an effort within individual executive departments and agencies to ensure that Primary Mission Essential Functions (PMEFs) continue to be performed during a wide range of emergencies, including localized acts of nature, accidents and technological or attack-related emergencies.

- **Resilience** - The ability to prepare for and adapt to changing conditions and withstand and rapidly recover from disruption due to emergencies. [Presidential Policy Directive (PPD)-8 (2011) and PPD-21 (2013)].
- **Risks** – A probability or threat of damage, injury, liability, loss, or any other negative occurrence that is caused by external or internal vulnerabilities, and that may be avoided through preemptive action. Risk is typically expressed as a function of threat and vulnerability.
- **Vulnerable populations** -Any individual, group, or community whose circumstances create barriers to obtaining or understanding information, or the ability to react as the general population. Circumstances that may create barriers include, but are not limited to age; physical, mental, emotional, or cognitive status; culture; ethnicity; religion; language; citizenship; geography; or socioeconomic status. Iowa Public Health Preparedness Program. Emergency planning for people with disability. [cited 2008 Nov 14].

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# PILOT CRB™ BENCHMARK: BUILDINGS

## Preamble

Buildings perform a key function in communities. Many of the other community functions rely on buildings to support the services they provide--police and fire stations support emergency response, hospitals support public health, schools support education, factories and office buildings support businesses and the economy, and houses support employees and citizens. The safety, sustainability and resilience of a community's building stock has a direct correlation to the community's overall resilience.

The CRB Benchmark: Buildings covers all occupiable structures in a community including new and existing buildings and both residential and non-residential/commercial buildings. This includes what may often be characterized as institutional and industrial buildings. The Buildings Benchmark focuses on the regulatory aspects of assuring the safety and resilience of the physical structures and not the policies associated with the provision of housing and the associated socio-economic factors--this topic is covered in the CRB Benchmark: Housing. Considered another way, the CRB Benchmark: Buildings is primarily focused on the activities of a code department or building department whereas the CRB Benchmark: Housing is focused on the functions associated with a housing authority or housing department.

## CRB Benchmark: Buildings Glossary

- **Buildings** - Any structure utilized or intended for supporting or sheltering any occupancy. When the benchmark refers to buildings, the term refers to 'new and existing, residential and non-residential' buildings unless otherwise specified.
- **Building department** - The party charged by the community to implement and enforce regulatory and incentive-based requirements. This responsibility may fall to multiple departments or parties recognized by the city including program administrators and third-party providers (inspections, plan review, special inspections, etc.).
- **Critical facilities** - Facilities that must maintain functionality during and after a disaster. In general, critical facilities provide services that might severely impact the safety of the public and its property during and after a disaster if not maintained. Critical facilities at a minimum, typically include police stations, fire stations (and associated vehicle storage), hospitals, water treatment plants, electric generating facilities, facilities that store hazardous/flammable materials, emergency shelters and emergency operations centers that could be at risk of losing functionality.
- **Emergency shelters** - Structures designated for short-term, immediate sheltering, including providing food, protection and basic public services, of individuals displaced by an emergency. Emergency shelters may be operated by governmental agencies, private sector organizations, or non-governmental organizations (non-profits). Emergency shelters are further defined in the FEMA document [https://www.fema.gov/media-library-data/1494264802106-ba1fb3179987a4a68241d0b66c68f748/NIMS\\_508\\_Short\\_Term\\_Shelter\\_MAR212017.pdf](https://www.fema.gov/media-library-data/1494264802106-ba1fb3179987a4a68241d0b66c68f748/NIMS_508_Short_Term_Shelter_MAR212017.pdf)
- **Model building codes** – Codes developed and maintained by a model code organization such as the International Code Council and National Fire Protection Association and adopted by reference by a local jurisdiction. This definition includes standards developed with the intent of being adopted as a code (e.g., ANSI/ASHRAE/IES Standard 90.1). Model codes are typically updated periodically by the development organization (3 year cycles) and

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may be amended at the state and local level to address unique local or regional issues. Model codes may be modified and adopted for use by a jurisdiction.

- **National resilience design standards** - Documents that have been developed to aid design professionals in the design of high performing buildings that consider not only the safety of occupants but the cost to repair structures and time to regain use of the building following an extreme event. Standards includes those developed by FEMA, the American Society of Civil Engineers, the [US Resiliency Council](#), [IBHS](#), and others.

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## **CRB Benchmark: Buildings Requirements**

| <b>1) Adoption of Building Codes</b>  |  |
|---|--|
| <b>Essential Requirements</b>   | <b>Acceptable Evidence</b>   |
| a) The community has adopted building codes substantially equivalent to the requirements contained in a model code that are no more than 9 years out of date. | <ul style="list-style-type: none"> <li>• Legislation, regulation, ordinance, or other statute showing adoption of codes that are no more than 9 years out of date relative to the most recently published editions.</li> </ul> |
| <b>Enhanced Requirements</b>  | <b>Acceptable Evidence</b>   |
| b) The community has adopted building codes substantially equivalent to the requirements contained in a model code that are no more than 6 years out of date. | <ul style="list-style-type: none"> <li>• Legislation, regulation, ordinance, or other statute showing adoption of codes that are no more than 6 years out of date relative to the most recently published editions.</li> </ul> |
| <b>Exceptional Requirements</b>   | <b>Acceptable Evidence</b>   |
| c) The community has adopted building codes substantially equivalent to the requirements contained in a model code that are no more than 3 years out of date. | <ul style="list-style-type: none"> <li>• Legislation, regulation, ordinance, or other statute showing adoption of codes that are no more than 3 years out of date relative to the most recently published editions.</li> </ul> |

### **Commentary:**

Building codes are the primary mechanism communities can use to regulate the design and construction of new buildings and the renovation of existing buildings. Codes reflect a community’s minimum accepted requirements for the protection of life-safety of building occupants and people in proximity to buildings. Most communities rely on model building codes as the basis for their locally adopted code. Model building codes are developed through a national consensus process to efficiently leverage national experts, respond to the latest research findings, identify and incorporate new technology and processes, and support economies of scale. The latest edition of the model codes reflect the current national consensus on the minimum requirements necessary to avoid and reduce potential losses of life and property in the face of hazards. Communities that adopt codes in a timely manner assure that any changes to its building stock meet current consensus levels.

A community’s commitment to the ongoing adoption of codes, and thus the resilience of the covered buildings, is reflected in the requirement levels. Communities that have adopted the current or immediately previous code edition (i.e., 2018 or 2015 ) are recognized as exceptional. To meet the enhanced requirements, a community may have a code in place significantly equivalent to the edition two cycles prior (i.e., 2012). Communities with codes three cycles

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older than the current edition (e.g., 2009) would meet the essential requirements. Codes prior to the 2009 editions do not provide sufficient resilience and should be updated.

This provision provides jurisdictions with the flexibility to amend the code to meet local needs as long as the amended provisions are substantially equivalent to the provisions contained in the code recognized by the requirements. For example, if a jurisdiction amends the 2018 codes, the amended content must be substantially equivalent to the 2009 codes to meet the Essential Requirements or substantially equivalent to the 2012 codes to meet the Enhanced Requirement. Where amendments have been made, the jurisdiction shall demonstrate that the adopted code meets the substantially equivalent requirement.

For codes to be effective, the community must also implement activities that support enforcement and training. See Benchmark Requirements 2 and 3.

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| 2) Administration and Enforcement of Building Codes   |   |
|---|---|
| Essential Requirements  | Acceptable Evidence   |
| a) The community allocates adequate human and financial resources to administer and enforce adopted building codes.   | <ul style="list-style-type: none"> <li>• A gap analysis has been done to determine if building code administration and enforcement resources are adequate. This includes adequate inspection personnel and time.</li> <li>• A schedule and training requirements are in place for code officials, designers and builders in the community.</li> <li>• Evidence of IAS accreditation of building officials or the department.</li> </ul> |
| Enhanced Requirements   | Acceptable Evidence   |
| b) The community ensures that all newly constructed buildings, existing buildings, and occupancies are compliant with adopted codes, and that existing buildings and occupancies are compliant with fire codes. | <ul style="list-style-type: none"> <li>• A code compliance study is performed every 3 years and demonstrates a compliance level of at least 50%. A copy of the most recent study is provided.</li> <li>• Demonstrate that a plan has been developed and implemented to fill the gaps identified in the administration and enforcement gap analysis.</li> </ul>  |
| Exceptional Requirements  | Acceptable Evidence   |
| c) The community ensures that all newly constructed buildings, existing buildings, and occupancies are compliant with adopted codes, and that existing buildings and occupancies are compliant with fire codes. | <ul style="list-style-type: none"> <li>• A code compliance study is performed every 3 years and demonstrates a compliance level of at least 75%. A copy of the most recent study is provided.</li> </ul>  |

**Commentary:**

Enforcement of building codes is necessary to assure that the anticipated results from adoption of codes are actually achieved. To achieve widespread compliance with the code, communities must commit to providing the human, technical and financial resources necessary to support permitting, plan review and inspections. These resources include training for both enforcement personnel and the industry stakeholders subject to provisions of the code. The Essential Requirements focus on the provision of such resources.

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To meet the Enhanced Requirement, a community must demonstrate that policies, procedures and practices are in place that lead to all buildings subject to adopted codes meet the requirements of those codes. This may be demonstrated through the conduct of a code compliance study (see <https://www.energy.gov/eere/buildings/downloads/residential-building-energy-code-field-study> for a potential methodology).

In addition to community resilience, the level of investment in code administration and enforcement can contribute to community goals around customer-centric service and economic development. Realistic timelines for permitting, plan review, and inspections can help facilitate positive relationships between the code department and developers, designers, builders and contractors and contribute to compliance.

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| 3) Licensure and Continuing Education or Testing for Contractors   |   |
|--|---|
| Essential Requirements   | Acceptable Evidence   |
| a) The community requires the licensing of the following contractors: general, plumbing, electrical, mechanical, fire protection and roofing, and provides citizens with a means of verifying such licenses. | <ul style="list-style-type: none"> <li>Copies of ordinances and verification mechanisms including procedures for the revocation of licenses and timely removal from the verification database.</li> </ul> |
| Enhanced Requirements  | Acceptable Evidence   |
| b) The community requires continuing education and/or testing for the following contractors: general, plumbing, electrical, mechanical, fire protection and roofing.   | <ul style="list-style-type: none"> <li>Copies of ordinances outlining requirements and mechanisms for revocation of licenses or penalties for non-compliance.</li> </ul>                                  |
| Exceptional Requirements   | Acceptable Evidence   |
| c) N/A   |   |

**Commentary:**

Contractors can either help or hinder a community’s efforts to achieve resilience in their building stock. They typically engage homeowners and building owners who make decisions on the level of investments made in a project (and whether permits are pulled, triggering plan review and inspections). Contractors serve as the implementers of both code requirements and incentive programs. Licensure provides communities with a level of consistency in the building process and a mechanism to monitor and remove contractors that do not meet these levels. Continuing education requirements support opportunities for ongoing improvement. As new codes, incentives or practices emerge contractors will be prepared to implement them. Licensure and continuing education requirements increase the likelihood that code provisions are being achieved. They also help limit the number of unpermitted projects.

These provisions can also help in post-disaster situations when unqualified contractors may come into an area to rebuild but either take advantage of consumers or do not deliver projects consistent with the building code.

The Insurance Institute for Business and Home Safety (IBHS) has used this metric is part of their “Rating the States” program (<https://disastersafety.org/ibhs-public-policy/rating-the-states/>).

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| 4) Mitigation of Highly Vulnerable Buildings   |  |
|--|--|
| Essential Requirements   | Acceptable Evidence  |
| a) The community has identified existing public and private buildings that are highly vulnerable to natural hazards affecting the community.   | <ul style="list-style-type: none"> <li>• A description of the natural hazards that present the greatest risk to the community.</li> <li>• A list and map of buildings the community believes do not meet basic life-safety requirements for the identified risks.</li> <li>• A quantification of the risks facing a community using software such as HAZUS, that estimates the social and economic impacts of natural disasters, climate change, etc. on the community.</li> </ul> |
| b) Owners of buildings and properties that are threatened by significant hazards facing the community have been notified. Regular re-assessment of risk, and notification of existing or new owners. | <ul style="list-style-type: none"> <li>• Copies of letters or other disclosures provided to building owners, minutes from public meetings in impacted communities, etc.</li> </ul>   |
| Enhanced Requirements  | Acceptable Evidence  |
| c) The community has established a mitigation program for existing, highly-vulnerable buildings to be 'life safe' within 30 years.   | <ul style="list-style-type: none"> <li>• Outline of the program including legislation, regulation, ordinance, or other statute demonstrating: <ul style="list-style-type: none"> <li>○ Adoption of national consensus based mitigation standards, and</li> <li>○ Establishment of regulatory and/or incentive and finance-based programs to achieve compliance with mitigation ordinances.</li> </ul> </li> </ul>  |
| Exceptional Requirements   | Acceptable Evidence  |
| d) The community is retrofitting its existing, highly-vulnerable buildings to be 'life safe,' in conformance with the established timeframe in (c) above.  | <ul style="list-style-type: none"> <li>• A community maintained comprehensive database of commercial structures and engineering reports that validate the performance capabilities of those buildings.</li> <li>• Reports on uptake of incentive programs</li> </ul>   |

**Commentary:**

The objective of building codes has typically been to produce buildings that are safe to occupy under everyday conditions, and which will not collapse during extreme events like earthquakes, high winds and severe flooding. However, in most communities the large majority of its building infrastructure, perhaps 80% or more, was built before modern editions of building codes. Older buildings, and those not built to the provisions of a modern code may be particularly

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susceptible to natural disasters, putting many of the community's residents and workforce at risk. Preserving a community's social capital is a critical measure of its ability to recover from a disaster.

It is essential for communities to understand the primary hazards they face. FEMA and other organizations (e.g. USGS, NOAA, National Fire Service) produce maps and reports identifying high risk locations for earthquake, flood, wind, tornado, wildfire and other hazards. Many other organizations (e.g. FEMA, American Society of Civil Engineers, Applied Technology Council) also have identified the particular types of structures – typically distinguished by material and age – that are most susceptible to particular hazards. To meet the Essential benchmark, the community will develop a report identifying the hazards and the individual buildings within the community that may be vulnerable. The report should be included in and updated as part of the community's FEMA required Local Hazard Mitigation Plan.

Once potentially vulnerable buildings have been identified, communities with enhanced resilience will adopt ordinances requiring that the potential for collapse or other significant life safety hazards in these buildings be mitigated over time. Cities such as Santa Monica, California have adopted such [ordinances](#), giving building owners up to 20 years in some cases to mitigate vulnerabilities. The community may consider a combination of regulation and incentives to increase compliance in particular for owners with limited resources. Many resources already exist for communities to develop standards for mitigation (e.g. [NIST](#)). In some cases, the most effective mitigation will be to replace a building.

Communities that have made measurable progress in the mitigation of their most vulnerable buildings will achieve the Exceptional benchmark. Though it may take several years, many communities have successfully implemented natural hazard mitigation programs that will reduce the life safety risk of their residents and workforce (Burlington, Iowa, for example, has begun implementing a \$26.2 million dollar flood mitigation project with the help of funds received from the Iowa Flood Mitigation Board. The project will take place in nine phases over the next seventeen years). To meet the Exceptional benchmark, the community will provide a list of vulnerable buildings that have been mitigated and the standards that were followed. Rating systems for the evaluation and mitigation of vulnerable buildings (e.g. [US Resiliency Council](#), [IBHS Fortified](#)) are useful tools to measure and designate buildings that have been mitigated.

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| 5) Mitigation and Design of Critical Facilities  |   |
|--|---|
| Essential Requirements   | Acceptable Evidence   |
| a) The community has identified public and private critical facilities.  | <ul style="list-style-type: none"> <li>• A list of facilities and the services and service areas they cover.</li> </ul>   |
| Enhanced Requirements  | Acceptable Evidence   |
| b) The community has adopted a plan for mitigating significant risks to critical facilities within 15 years.   | <ul style="list-style-type: none"> <li>• Legislation, regulation, ordinance, or other statute demonstrating adoption of national consensus based mitigation standards for critical facilities subject to natural hazard risk.</li> <li>• Copy of the plan and evidence of implementation of key measures identified in the plan.</li> </ul>   |
| Exceptional Requirements   | Acceptable Evidence   |
| c) The community is retrofitting its existing, critical facilities in conformance with the established timeframe in (b) above.<br><br>New critical facilities are designed and built to a resilient standard above code. | <ul style="list-style-type: none"> <li>• A community maintained, comprehensive database of critical facilities and engineering reports that validate the performance capabilities of those buildings.</li> <li>• Documentation of adopted community codes or standards requiring the design of new critical facilities to resilient standards.</li> <li>• Optional: Building Information Modeling (BIM) of newly built and existing critical facilities is made available to building and emergency officials.</li> </ul> |

**Commentary:**

The objective of building codes has typically been to produce buildings that are safe to occupy under everyday conditions, and which will not collapse during extreme events like earthquakes, high winds and severe flooding. However, in most communities a subset of the building infrastructure is required to perform at a higher level than life safety in order to serve the community’s needs during and immediately following the event. In general, critical facilities provide services that might severely impact the safety of the public and its property during and after a disaster if not maintained.

It is essential for communities to identify their critical facilities and understand their expected performance under the primary hazards they face. To meet the Essential benchmark, the community will develop a report identifying the hazards and the individual buildings within the community that may be vulnerable. The report should be included in and updated as part of the community’s FEMA required Local Hazard Mitigation Plan.

Once potentially vulnerable buildings have been identified, communities with enhanced resilience will adopt ordinances requiring that both the potential for collapse or other significant life safety hazards in these buildings, and the potential that these facilities will not be functional following or soon after a major event be mitigated over time. States such as California have adopted laws requiring that hospitals be brought into compliance with functional standards over a 35 year time period. Guidelines exist for the mitigation of critical and other facilities to meet enhanced performance objectives ([FEMA 543](#), [FEMA P-1050](#),

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[FEMA P-58](#), [ASCE 41-17](#), [NFPA 1616](#) and others) The community may consider a combination of regulation and incentives to increase compliance in particular for owners with limited resources.

Communities that have made measurable progress in the mitigation of their critical facilities will achieve the Exceptional benchmark. Though it may take several years, many communities have successfully implemented natural hazard mitigation programs that will improve their ability to respond to and recover from disasters. To meet the Exceptional benchmark, the community will provide a list of critical facilities that have been mitigated and the standards that were followed. Rating systems for the evaluation and mitigation of vulnerable buildings (e.g. [US Resiliency Council](#), [IBHS Fortified](#)) are useful tools to measure and designate buildings that have been mitigated.

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| 6) Resilient Design  |   |
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| Essential Requirements   | Acceptable Evidence   |
| a) The community allows developers and builders to voluntarily exceed building code requirements.  | <ul style="list-style-type: none"> <li>Remove and /or verify that there are no legislative barriers to prevent use of above code programs. Documentation reflecting analysis and evidence of implementation of key measures identified during the analysis.</li> </ul>  |
| b) The community engages with building owners, developers and builders to educate them on the value of resilient design.   | <ul style="list-style-type: none"> <li>Documentation of programs designed to raise awareness about resilient design.</li> </ul>   |
| Enhanced Requirements  | Acceptable Evidence   |
| c) The community incentivizes developers, builders and homeowners to exceed code and meet resilient design standards.  | <ul style="list-style-type: none"> <li>Program documentation and outreach materials for tangible incentives for above code/resilient design. Incentives may include reduced permit fees or expedited permit review, utility rebate programs, tax incentives, or other creative programs to encourage better performance.</li> </ul> |
| Exceptional Requirements   | Acceptable Evidence   |
| d) Community incentives to meet resilient design standards have shown measurable success.  | <ul style="list-style-type: none"> <li>Analysis of incentive program participation and permit data indicating that 25% of all new construction projects in the community meet national standards for resilient design.</li> </ul>   |
| e) The community's building code requires that buildings be designed to mitigate the foreseeable projected changes facing the community throughout their service life. | <ul style="list-style-type: none"> <li>Provide relevant section(s) of local building code or resilient design standards that require considering not only current conditions but trends in existing data (e.g., <i>increasing precipitation, increased temperature extremes</i>) that suggest heightened risk over time.</li> </ul> |

**Commentary:**

The objective of building codes has typically been to produce buildings that are safe to occupy under everyday conditions, and which will not collapse during extreme events like earthquakes, high winds and severe flooding. However, for a community to quickly recover from these extreme events, it is important that there exist a minimum ability to provide the services that residents need and expect. In addition to the services performed by critical facilities, a community needs to have a minimum amount of other basic goods and services available, like food, water, shelter, schools, retail space, office space, etc. In 2010 and 2011 two massive earthquakes struck Christchurch, New Zealand. Although only two modern buildings collapsed in the downtown business district, over half of the area's buildings were eventually demolished because of damage. This left the district a virtual ghost town that even eight years later has not recovered.

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It is essential for communities that building owners and developers be permitted to build with resilience in mind, and that the local building departments are permitted, willing and capable of reviewing buildings built to resilience standards that exceed minimum building code provisions. Guidelines exist for the design of new buildings to meet enhanced performance objectives ([FEMA 543](#), [FEMA P-1050](#), [FEMA P-58](#), [ASCE 41-17](#), [NFPA 1616](#) and others). Examples may include mandated extended setbacks to prevent long-term damage to structures from coastal erosion, exceptional building elevation requirements to protect buildings from expected increases in storm surge, and designs using advanced earthquake resistant technologies like base isolation.

Communities with enhanced resilience will develop tangible incentives to encourage owners, developers and builders to build above code and implement resilient design. Incentives may include reduced permit fees or expedited permit review, utility rebate programs, tax incentives, or other creative programs to encourage better performance. The expectation is not that communities will mandate higher than code performance but that they will encourage the market to adopt resilience based design as good investment and protection of important assets. Designation of higher performing buildings using national rating systems such as developed by [US Resiliency Council](#), [IBHS Fortified](#), can also increase demand and market value of these buildings, in the same way that LEED® certified buildings command higher rents and sale prices in many areas.

Communities that have seen measurable adoption of resilience standards for new buildings will achieve the Exceptional benchmark. To meet the Exceptional benchmark, the community will provide a list of buildings that have been designed to achieve higher performance, the standards that were followed, and the goods or services that are provided by those buildings.

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## 7) Disaster Response / Continuity of Operations Plans (COOP)

| Essential Requirements   | Acceptable Evidence   |
|--|---|
| a) The building department participates in the community's COOP plan.  | <ul style="list-style-type: none"> <li>● A written COOP. This may be contained within a local government's COOP but must explicitly address the continuity of these functions. The Continuity of Operations plan should be compliant with national standards (e.g. FEMA Continuity Guidance Circular, Feb. 2018).</li> </ul>  |
| b) The community provides liability protection for design professionals assisting in disaster-related community recovery efforts.  | <ul style="list-style-type: none"> <li>● Good Samaritan law or similar ordinances that limit liability for qualified disaster response volunteers.</li> </ul>   |
| c) The community requires continuing education of Building department and inspection staff on the evaluation of damaged buildings and the incident command structure used by FEMA and other Federal, state and local agencies. | <ul style="list-style-type: none"> <li>● Inspection staff are certified on damage assessments for structures and obtain FEMA certifications, training and continuing education. List of training received and certified individuals along with their certifications.</li> <li>● Documentation from joint disaster exercises between building departments and emergency management partners in the community. Include schedule of exercises, personnel participating and any final reports generated.</li> </ul> |
| Enhanced Requirements  | Acceptable Evidence   |
| d) The building department has adequately implemented its responsibilities under the COOP.   | <ul style="list-style-type: none"> <li>● Documentation summarizing compliance with the community's written plan along with documentation on how resources are designated to implement the plan.</li> <li>● Documented compliance with FEMA STEP and BORP Standards.</li> <li>● At least 25% (minimum of 1) of all disaster response personnel have licensure.</li> </ul>  |
| e) The community has designated resources for implementation of the plan.  |   |
| f) The community has an activation mechanism and associated credentialing program to allow rapid access of personnel to facilitate recovery.   | <ul style="list-style-type: none"> <li>● Comply with the forthcoming NIMS Building Safety Assessment Team resource.</li> <li>● Provide a copy of an activation MOU with appropriate stakeholders, including but not limited to professional organizations. Documentation on the public/private MOU's are made available and updated regularly.</li> </ul>   |
| g) The community has agreements in place with the private sector, including, but not limited to, gas stations and contractors to assist in disaster recovery efforts like debris removal.                                      | <ul style="list-style-type: none"> <li>● Provide examples of coordinated engagements among the business community and government to foster good working relationship during the recovery process.</li> </ul>  |

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| Exceptional Requirements  | Acceptable Evidence  |
|---|--|
| h) The building department is an active participant in FEMA and local emergency management exercises.                               | <ul style="list-style-type: none"> <li>Records of Building Department participation in Emergency Management exercises.</li> </ul>  |
| i) The community has developed MOU's / Mutual Aid Agreements with other jurisdictions to assist with safety and damage assessments. | <ul style="list-style-type: none"> <li>Documentation of MOU's / Mutual Aid Agreements.</li> <li>For trades licensed in other jurisdictions, a State-level portability of licensure law.</li> </ul> |

**Commentary:**

While mitigating against disasters has been proven highly cost effective, many communities have not made the investments necessary to avoid most disasters--particularly the most extreme events. When a disaster or emergency happens, a community needs to be prepared to quickly recover. Part of that recovery includes rebuilding. Having the plans in place includes exercising them and also working with local partners, including local Emergency Management and other community groups representing the community in recovery. In order to have a smooth transition from response to recovery, having Continuity of Operation Plans already in place and well tested/exercised, will ensure this smooth transition and assure the community that recovery will be happening even as response continues.

In many cases, disasters overwhelm the capacity of the local code officials to support building assessments and rapid reconstruction. Many of these functions can be supported by experts from outside the community including code officials from other jurisdictions and architects and engineers. However, agreements and policies must be in place in advance to allow easy activation of these resources. Other pre-planning including COOPs allow rapid mobilization and action. In keeping with the theme of whole community resilience, the building department COOP must be coordinated and integrated with the community's COOP.

The Continuity Guidance Circular (02/2018) is based on whole community continuity. The whole purpose of the circular is to “enable communities and organizations to continue essential functions and provide critical services [buildings are part of critical services] across a broad spectrum of emergencies when normal operations are disrupted.”

The requirements set up a continuum of policies and practices that lead to effective development and implementation of the COOP along with agreements to facilitate outside support.

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## 8) Standards for Emergency Shelters

| Essential Requirements   | Acceptable Evidence   |
|--|---|
| a) The community has identified and designated emergency shelters and verified that they meet appropriate standards. | <ul style="list-style-type: none"> <li>• A documented comparison of the amount of shelter space to the potential need, the susceptibility of the shelters to the significant risks facing the community, and accessibility for those who need it. If there is the potential for insufficient emergency shelter space the community should determine which public or private facilities could be used as temporary shelters.</li> <li>• Demonstration that any building identified for use as an emergency shelter is classified as such (e.g, through critical facility FEMA P-361, ICC 500 or USRC Shelter-in-Place compliance). Alternate locations should also be on file with MOU agreements, etc.</li> </ul> |
| Enhanced Requirements  | Acceptable Evidence   |
| b) Designated emergency shelters are inspected annually to ensure continued standards compliance.                    | <ul style="list-style-type: none"> <li>• Copies of inspection reports.</li> </ul>   |
| Exceptional Requirements   | Acceptable Evidence   |
| c) N/A   |   |

### **Commentary:**

One of the most immediate needs of a community is to temporarily house residents who have been displaced following a major disaster. These residents may include homeowners, renters, and particularly, vulnerable populations who already experience chronic housing stress in non-disaster situations. This can also include visitors to a community or workers who may be trapped by the event and unable to return to their homes.

The Beaverton, Oregon school district has defined requirements for a building to serve as a shelter that include at a minimum, the building be structurally safe and usable and that building components (building skin, partition walls, ceiling systems, storage cabinets, mechanical equipment, electrical equipment, plumbing, equipment, etc.) not present hazards. In addition they require the following:

- Thermal Comfort: A wide temperature range is acceptable.
- Natural Ventilation: Being able to bring in fresh air is important.
- Lighting: They can make do with battery lanterns and flashlights if necessary.
- Emergency Power: A source of electricity for lighting, powering medical devices and recharging personal electronic devices.
- Water Supply: A source of water for drinking and personal hygiene.

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- Wastewater: An operating wastewater system or holding tank if building restroom and shower facilities are being utilized.

The City of San Francisco has adopted a plan to identify shelter needs and develop standards that includes the following efforts (*Safe Enough to Stay*, SPUR, 2012):

- Develop shelter-in-place evaluation criteria for voluntary, mandatory and triggered seismic work on residential buildings.
- As draft criteria are developed, generate new loss estimates to help inform planning activities.
- Create a San Francisco interdepartmental shelter-in-place task force.
- Prepare and adopt regulations that allow for the use of shelter-in-place habitability standards in a declared housing-emergency period.
- Develop a plan for implementing a shelter-in-place program.
- Develop plans for neighborhood support centers to provide necessary help for shelter-in-place communities.

A community meeting the Essential resilience benchmark will identify probable shelter needs for a range of disaster scenarios, based on a study, use of models such as HAZUS, or other rational methods. Documents produced by organizations including FEMA, ICC, The American Red Cross and others can assist communities with identifying or developing standard criteria for shelters. Communities with Enhanced resilience will annually inspect facilities designated as shelters to confirm that they remain in compliance with adopted standards.

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| 9) Financial Resources for Post-Event Recovery   |  |
|--|--|
| Essential Requirements   | Acceptable Evidence  |
| a) The community has received an average or higher rating from an accepted insurance rating system.  | <ul style="list-style-type: none"> <li>● Report indicating: <ul style="list-style-type: none"> <li>○ Building Codes Effectiveness Grading Schedule (BCEGS) rating of 5 or better</li> <li>○ Public Protection Classification (PPC) rating of 8 or better</li> <li>○ National Flood Insurance Program Community Rating System (NFIP CRS) rating of 5 or better</li> </ul> </li> </ul> |
| b) Communities have estimated the damage that will be suffered in future disasters and identified their available resources and resource gaps. | <ul style="list-style-type: none"> <li>● Risk estimate reports summarizing expected disaster impacts.</li> <li>● Documented estimates of available resources to recover from disasters.</li> </ul>   |
| c) Communities engage and outreach with citizens about insurance and other financial topics related to disasters.                              | <ul style="list-style-type: none"> <li>● Copies of outreach materials and a description of how they are disseminated.</li> </ul>   |
| Enhanced Requirements  | Acceptable Evidence  |
| d) The community is taking steps to improve its rating under insurance rating systems.   | <ul style="list-style-type: none"> <li>● Copies of ordinances and program materials from incentive and other programs aimed at improving ratings and increasing financial resources for recovery.</li> </ul>   |
| e) Communities are actively engaged in established programs to increase their financial resources and close identified resource gaps.          | <ul style="list-style-type: none"> <li>● Documentation of activities intended to address these needs.</li> </ul>   |
| Exceptional Requirements   | Acceptable Evidence  |
| f) The community has effectively implemented its program to improve its insurance ratings by 10 percent every 5 years.                         | <ul style="list-style-type: none"> <li>● Insurance rating documentation from the applicable rating organization demonstrating rating increases equivalent to 10% improvement each 5 year cycle.</li> </ul>   |
| g) Communities, in combination with federal sources, have secured the resources necessary to recover from future natural disasters.            | <ul style="list-style-type: none"> <li>● Documentation indicating that the community has secured resources to meet the estimates of damage identified.</li> </ul>  |

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### **Commentary:**

Disaster recovery frequently imposes a significant cost to the affected community. While the Federal government and many states offer some form of disaster cost assistance and reimbursement to local communities, securing such funding is not guaranteed and may take an extended time in coming. Resilient communities recognize the financial challenges that result from such unforeseen events and develop plans and contingencies in advance to guide the financial aspects of recovery; and identify resource needs and sources to support the recovery effort.

A significant source of recovery funding at the community level comes from insurance coverage for impacted structures. However, for a variety of reasons not all building owners have insurance to cover their losses. Essentially resilient communities have developed programs to educate community members about the importance of maintaining adequate insurance coverage to fund timely repair and restoration of their built environment. In addition, the communities have developed estimates on potential losses from incidents related to identified hazards, and have identified potential sources for resources necessary to achieve an effective recovery. The community's insurance profile is generally described through rating systems established by insurance industry organizations such as the Insurance Services Organization (ISO) and others. Such ratings provide the community with a means of measuring changes in community services that impact community-wide insurance rates. Essentially resilient communities participate in insurance rating programs and demonstrate an average level of protection as measured by the community's rating organization.

Communities with enhanced levels of resilience have worked with partners and stakeholders to develop collaborative plans for improving community services and securing resources that improve the community's rating while reducing insurance rates, which may result in an increase in the number of adequately insured properties. In addition, communities with an enhanced level of resilience have developed and maintained "emergency" or "contingency" funds dedicated to providing resources to support community recovery and resilience in the aftermath of a disaster. Such funds should be carefully structured to assure that they do not impair the community's ability to obtain Federal or state disaster assistance when available.

Exceptionally resilient communities build on the efforts described for essential and enhanced resilience by establishing improvement goals, establishing timelines, and taking positive steps to develop and implement the strategies and programs necessary to achieve them. In addition, exceptional communities have collaborated with regional, state and federal partners to develop plans and procedures that identify and secure access to recovery resources in a timely, effective manner.

For details on the identified insurance rating systems see [BCEGS](#), [PPC](#), and [NFIP CRS](#).

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