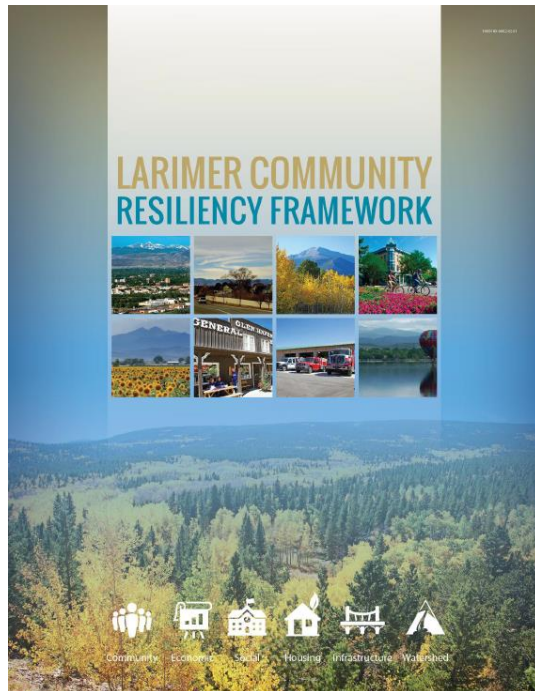


RESILIENCE PLANNING



HAZARDS ADDRESSED



HOW IT WORKS

Planning for resilience empowers diverse stakeholders to evaluate plans, set strategic policies, and implement projects that will enable communities to adapt and thrive when faced with challenges. Natural and human-caused hazards constitute some of the acute “shocks” to which a community can be vulnerable. Other disruptive threats include longer-term societal “stresses,” such as unemployment, poor access or barriers to education, crime, or homelessness. Resiliency planning can include updating land use codes, zoning, development standards, incentive programs, and other plans or policies to better prepare for likely shocks and stresses while also developing measures that allow for action in the face of uncertainty or unexpected events.

After the 2012 wildfires and 2013 floods, many Colorado communities began considering not only how to rebuild damaged homes, businesses, infrastructure, and community assets, but also how to develop long-term strategies for resilience. This catalyst has made Colorado a leader in the development of resilience planning approaches and tools.

WHAT IS RESILIENCE?

The State of Colorado published the [Colorado Resiliency Framework](#) in 2015, which defines resilience as “the ability of communities to rebound, positively adapt to, or thrive amidst changing conditions or challenges – including disasters and climate change – and maintain quality of life, healthy growth,

durable systems, and conservation of resources for present and future generations.” Other leaders in the field of resilience have similar definitions of resiliency. The Rockefeller Foundation’s *100 Resilient Cities* initiative defines urban resilience as “the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.”

Resilient communities are often characterized as systems that possess the following seven qualities (100 Resilient Cities):

- **Reflective:** using past experience to inform future decisions
- **Resourceful:** recognizing alternative ways to use resources
- **Inclusive:** prioritize broad consultation to create a sense of shared ownership in decision making
- **Integrated:** bring together a range of distinct systems and institutions
- **Robust:** well-conceived, constructed, and managed systems
- **Redundant:** spare capacity purposively created to accommodate disruption
- **Flexible:** willingness and ability to adopt alternative strategies in response to changing circumstances

Projects or policies developed to increase resilience usually fulfill many of the following characteristics (Colorado Resiliency Framework):

- **Co-Benefits:** Provide solutions that address problems across multiple sectors creating maximum benefit
- **High Risk and Vulnerability:** Ensure that strategies directly address the reduction of risk to human well-being, physical infrastructure, and natural systems
- **Economic Benefit-Cost:** Make good financial investments that have the potential for economic benefit to the investor and the broader community both through direct and indirect returns
- **Social Equity:** Provide solutions that are inclusive with consideration to populations that are often most fragile and vulnerable to sudden impacts due to their continual state of stress
- **Technical Soundness:** Identify solutions that reflect best practices that have been tested and proven to work in similar regional context
- **Innovation:** Advance new approaches and techniques that will encourage continual improvement and advancement of best practices serving as models for others in Colorado and beyond
- **Adaptive Capacity:** Include flexible and adaptable measures that consider future unknowns of changing climate, economic, and social conditions
- **Harmonize with Existing Activity:** Expand, enhance, or leverage work being done to build on existing efforts

- **Long-Term and Lasting Impact:** Create long-term gains to the community with solutions that are replicable and sustainable, creating benefit for present and future generations

APPROACHES FOR INTEGRATING RESILIENCE INTO PLANNING AND LAND USE DECISIONS

Resilience planning is an emerging and far-reaching concept, with various approaches for appropriately integrating resilience into community planning and land use.

Integrate Resilience into the Comprehensive Plan

As the comprehensive plan serves as the community’s long-term policy blueprint, it is valuable to draft or update the comprehensive plan with resilience as an interwoven or guiding theme. This allows a community to construct their own vision of what it means to be “resilient,” as well as identify and prioritize action items that increase resilience. The process for incorporating resiliency into a comprehensive plan can be achieved by following the steps outlined in the [Comprehensive Plan tool profile](#) of this Guide. A resilient comprehensive plan encompasses natural and human-caused hazards (the “shocks” to a community), while also addressing the social, environmental, and economic “stresses” into the goals and strategies. To achieve this, comprehensive planning efforts should be informed by a risk assessment that includes identification of hazards and existing or potential stresses.

The **City of Longmont** updated their comprehensive plan in 2016 using a systems approach with sustainability and resilience woven throughout the plan. Other examples of comprehensive plans that address hazard risk reduction and resilience can be found in the [Comprehensive Plan tool profile](#) of this guide.

Develop a Stand-Alone Resiliency Framework or Plan

This approach may be helpful if multiple jurisdictions are coming together to develop strategies for resilience, or if a community seeks to develop and apply a consistent “resilience lens” across multiple initiatives, processes, or departments. A resiliency framework, plan, or strategy can also provide guidance if a comprehensive plan update is not scheduled to occur in the near future. The development and implementation of a stand-alone resiliency plan requires many stakeholder groups to come together, establish a common vision for resilience, and share responsibility for certain aspects of community resilience.

Initiatives such as the Rockefeller Foundation’s *100 Resilient Cities* have developed frameworks and guiding documents to support towns and cities in becoming more resilient. Twenty four U.S. cities were selected to participate in the 100 Resilient Cities initiative, and many, such as the City of Boulder, Colorado, have developed resilience plans.

In December of 2016, the **City of Boulder** adopted their [Resilience Strategy](#), which identifies Boulder’s core resilience challenges and develops a framework for tackling those challenges. The document outlines fifteen actions to further three strategies, including “connect and prepare,” “partner and

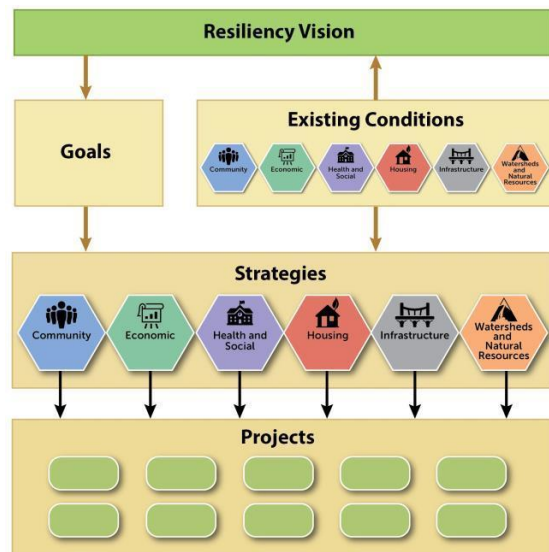
innovate,” and “transform and integrate.” Additionally, the *Resilience Strategy* highlights three “frontiers,” or long-term, transformative investments in Boulder’s future.

Other Colorado communities that are developing region-wide resiliency plans include **Larimer, El Paso, and Boulder Counties**. In 2015, with assistance from the Colorado Resiliency and Recovery Office, each of these communities held several planning sessions over a six-month period of time to discuss actions they can undertake to improve their collective resilience.

Participant stakeholders from each county included county and municipal agencies, state and federal partners, emergency response and recovery organizations, locally-based research institutions, non-profit and faith-based organizations, and private sector partners.

The Colorado Resiliency Framework planning process consisted of the following steps:

- Establish a vision of resilience for the community.
- Document existing conditions in the community.
- Review the shocks and stresses to understand vulnerabilities the community faces.
- Develop forward-looking goals, actionable strategies, and priorities.
- Provide a framework for ongoing implementation and action for communities to build capacity, increase community connectivity, and move forward toward a more-resilient future.



The Colorado Resiliency Resource Center’s [Resiliency Framework webpage](#) has more detailed information and guidance on developing local resiliency frameworks.

Conduct a Resilience Audit of Existing Plans and Policies

Another approach for assessing and promoting resilience is to conduct an audit or evaluation of plans and land use policies that already guide the functioning and operation of the community. This enables a community to identify possible inconsistencies among plans, policies, and programs that can be addressed to increase resilience to both shocks and stresses. Below are several examples of audits that can be tailored to a community’s existing conditions.

A 2015 [article](#) published in the Journal of the American Planning Association (JAPA) details the development of a resilience scorecard that maps the physical and social vulnerabilities of the community to hazards. It then evaluates different types of local plans that govern land use to determine whether the goals reduce or increase vulnerability to hazards. Using the city of

Washington, North Carolina as a pilot community, the authors first delineate the city’s planning districts and hazard zones using the comprehensive plan, land use map, and FEMA flood maps, also accounting for future conditions projections. Next, vulnerability is determined by applying data from building tax rates and the Social Vulnerability Index for Disaster Management of the U.S. Centers for Disease Control. Finally, each policy in each plan is evaluated for how it affects physical planning districts and hazard areas and whether it increases or decreases vulnerability to hazards. The level of consistency of policies across plans is also evaluated.

Published in 2009 by the American Planning Association in issue 10 of *Zoning Practice*, the [Safe Growth Audit](#) remains another valuable tool for ensuring that comprehensive plans, zoning, capital improvement programs, subdivision regulations, building codes, and more are promoting policies that reduce the vulnerability of communities to hazards. This process involves reading and evaluating all relevant plans and policies, and answering targeted questions about how they promote hazard mitigation. The author, David R. Godschalk, FAICP, also outlines several common principles of safe growth that should be carried out by communities:

- Guide growth away from high-risk locations
- Locate critical facilities outside high-risk zones
- Preserve protective ecosystems
- Retrofit buildings and facilities at risk in redeveloping areas
- Develop knowledgeable community leaders and networks
- Monitor and update safe growth programs and plans

Refer to issue 10 of *Zoning Practice* for the full list of *Safe Growth Audit* questions. While the *Safe Growth Audit* focuses primarily on resilience to hazards, this approach can easily be expanded to include questions regarding social and economic resilience specific to community stresses. Example audit questions include:

- Does the comprehensive plan set forth policies to reduce the number of housing units that are not up to code and/or vulnerable to natural hazards?
- Does zoning density encourage the construction of affordable housing in non-hazardous areas?

The Environmental Protection Agency’s Smart Growth Implementation Assistance program in Vermont developed a [Flood Resilience Checklist](#) to “help communities identify opportunities to improve their resilience to future floods through policy and regulatory tools, including comprehensive plans, Hazard Mitigation Plans, local land use codes and regulations, and non-regulatory programs implemented at the local level.” Some examples of questions asked in the *Flood Resilience Checklist* include:

- Does the comprehensive plan cross-reference the local Hazard Mitigation Plan and any disaster recovery plans?

- Has the community implemented non-regulatory strategies to conserve land in river corridors, such as:
 - Acquisition of land (or conservation easements on land) to allow for stormwater absorption, river channel adjustment, or other flood resilience benefits?
 - Buyouts of properties that are frequently flooded?
 - Transfer of development rights program that targets flood-prone areas as sending areas and safer areas as receiving areas?
 - Tax incentives for conserving vulnerable land?
 - Incentives for restoring riparian and wetland vegetation in areas subject to erosion and flooding?
- Do land development regulations and building codes promote safer building and rebuilding in flood-prone areas? Specifically:
 - Do zoning or flood plain regulations require elevation of two or more feet above base flood elevation?
 - Does the community have the ability to establish a temporary post-disaster building moratorium on all new development?
 - Have non-conforming use and structure standards been revised to encourage safer rebuilding in flood-prone areas?
 - Has the community adopted the International Building Code or American Society of Civil Engineers (ASCE) standards that promote flood-resistant building?
 - Does the community plan for costs associated with follow-up inspection and enforcement of land development regulations and building codes?

ADVANTAGES AND KEY TALKING POINTS

- A resilience plan or audit provides the community with an understanding of policies, programs, and other actions that can be taken across many sectors to improve the community's resilience to hazards or changing conditions.
- Planning for resilience can reduce future disaster related response and recovery costs and improve recovery time following natural or human-caused hazard events.
- Planning for resilience can help anticipate and reduce the severity of economic downturns and other stresses.
- Resilience can be interwoven into any planning process in the community, such as an economic development plan, hazard mitigation plan, or parks and recreation plan.

CHALLENGES

- Since resilience spans across many sectors, it may be challenging to secure sustained participation and support from all relevant stakeholders.

- Strategies that may promote resilience in one sector (such as increasing affordable housing) may conflict with another component of resilience (such as prohibiting development in high-hazard areas) without consistent coordination.

KEY FACTS

Administrative capacity	Varies depending on approach. Requires staff time and taskforce to create and implement the plan.
Mapping	May be needed to analyze shocks or stresses with a spatial dimension
Regulatory requirements	None required
Maintenance	Review annually to track progress; updates are community dependent and may be prompted by a major disaster event, significant changes in community existing conditions, updates to related plans (e.g., hazard mitigation plans), and completion of a significant number of recommendations identified in the plan
Adoption required	No, though strongly encouraged if plan is developed
Statutory reference	N/A
Associated costs	Dependent on scale and level of complexity. Could include staff time, plus potential costs for mapping or other technical work, public outreach activities, and consultant services. Could also include applying resilience criteria to existing budgeting processes.

EXAMPLES

City of Longmont Envision Longmont Comprehensive Plan	basalt.net/193/Parks-Open-Space-Trails-Master-Plan
City of Colorado Springs Parks System Master Plan	envisiolongmont.com/document/envision-longmont-adopted-062816
City of Boulder City of Boulder Resilience Strategy	bouldercolorado.gov/resilience
Larimer County Collaborative Larimer Community Resiliency Framework	larimer.org/emergency/pdfs/larimer_resiliency_framework.pdf

FOR MORE INFORMATION

100 Resilient Cities

100resilientcities.org/#

American Planning Association: Zoning Practice, Issue 10. Practice Safe Growth Audits (October 2009)

planning-org-uploaded-media.s3.amazonaws.com/legacy_resources/zoningpractice/open/pdf/oct09.pdf

Colorado United – Local Resiliency Initiatives

sites.google.com/a/state.co.us/coloradounited/resiliency/local-resiliency-initiatives

Colorado Resiliency Resource Center - Resiliency Frameworks and Community Worksheets

coresiliency.com/resiliency-frameworks

Colorado Resiliency Framework

sites.google.com/a/state.co.us/coloradounited/resiliency-framework

EPA Flood Resilience Checklist

epa.gov/sites/production/files/2014-07/documents/flood-resilience-checklist.pdf

Evaluation of Networks of Plans and Vulnerability to Hazards and Climate Change: A Resilience Scorecard. Journal of the American Planning Association (November 2015)

tandfonline.com/doi/abs/10.1080/01944363.2015.1093954?redirect=1&journalCode=rjpa20

Resilient Communities Starter Kit

sonoraninstitute.org/resource/resilient-communities-starter-kit-08-29-2015

Rural Economic Resilience Study

choosecolorado.com/wp-content/uploads/2016/07/Resiliency-Study.pdf