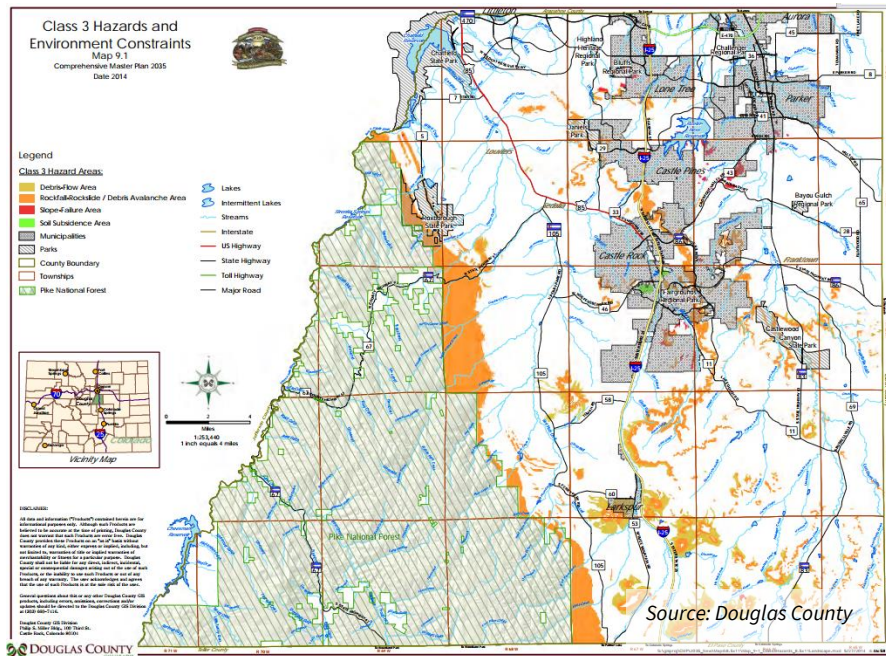


COMPREHENSIVE PLAN



HAZARDS ADDRESSED



HOW IT WORKS

Integrating hazard mitigation and risk reduction into comprehensive plans is a key approach that provides an umbrella, or overarching policy framework, for various other planning tools. The comprehensive plan is a policy document, making it fundamentally different from many of the other planning tools profiled in this chapter. General considerations for integrating hazards into comprehensive plans include:

- Hazard mitigation measures are not only infrastructure-related. They can include community level communication, preparedness planning, and other non-structural measures.
- Whenever possible, mitigation measures should work to mimic natural processes rather than engineered solutions, such as reconnecting a creek to its floodplain for natural flood control rather than channelizing it.
- The safety of vulnerable communities related to natural hazard risks and other stressors should receive particular attention in the comprehensive plan.

WHAT IS A COMPREHENSIVE PLAN?

A comprehensive plan (often called “master plan,” “general plan,” or “community plan”) expresses a community’s overarching vision, goals, objectives, policies, and strategies for the future growth, development, and preservation of the community, protection of community assets, and provision of services.

Colorado statutes authorize local governments to prepare master plans to serve as guiding documents. In some cases, local governments are required to prepare master plans. C.R.S. § 30-28-

106(4)(a) requires counties with more than 10,000 in population and meeting defined growth percentages to adopt a master plan. Similarly, C.R.S. § 31-23-206(4)(a) requires municipalities with a population of 2,000 people or greater in a qualifying county to prepare and adopt a master plan (*House Bill 01S2-1006*, 2011).

Comprehensive plans also vary in terms of the overall organizational structure, the number and types of elements addressed, and the degree to which specific action items are threaded throughout the guiding policies. A traditional comprehensive plan is organized by element, with each element given a unique chapter or section of the plan. Common elements included in comprehensive plans include:

- Land use
- Transportation
- Housing
- Economy
- Environment
- Governance
- Parks and open space
- Recreation and tourism (only required element per state statutes)
- Community design and character

Within each of these elements, most comprehensive plans contain the following components, or some variation:

- **Vision.** What is the community's underlying vision for the future?
- **Goals.** Within each element, what are the goals the community seeks to achieve?
- **Policies.** Within each goal, how can the community address the issue to achieve desired results?
- **Strategies or actions.** What are the specific steps a community can take to address a stated issue?
- **Mapping.** What are the desired future land use scenarios, and how do existing and future conditions change based on the other elements addressed in the plan?

As planners increasingly focus on the interrelatedness of plan elements, organizing the comprehensive plan by themes is more common. For example, a community may opt to include a sustainability section within each plan element, rather than dedicating a single element to sustainability. Fort Collins' recent plan update called "City Plan" has a unique organizational framework. The plan illustrates the interconnectedness of each of the other plan elements, explores the "triple bottom line" of sustainability throughout, and is tied to the city's "budgeting for outcomes" process.

APPROACHES FOR INTEGRATING HAZARDS INTO COMPREHENSIVE PLANS

Communities increasingly address sustainability, energy, climate, and resilience in their comprehensive plans. Home rule communities have broad authority to address these and many other subjects in their plans and regulations. Statutory communities also have authority to address hazard areas in master plans. Specifically, C.R.S. § 30-28-106 (for counties) and § 31-23-206 (for municipalities) requires planning commissions to consider "the areas containing steep slopes, geological hazards, endangered or threatened species, wetlands, floodplains, floodways, and flood

risk zones, highly erodible land or unstable soils, and wildfire hazards” (*House Bill 12-1317*, 2012). Because the comprehensive planning process typically involves a robust public engagement component, it is an excellent opportunity to educate the community on the importance of planning for hazards.

Both the American Planning Association and FEMA have provided helpful guidance for integrating hazard issues into the comprehensive planning process; the respective resources are cited at the conclusion of this section.

There are several approaches to addressing hazard elements in a comprehensive plan, as discussed in the subsections below.

Include a Dedicated Hazard Mitigation Element

One effective way to focus attention on the importance of hazard mitigation and avoidance in a comprehensive plan is to give the subject its own dedicated section, either as a stand-alone plan element or a subsection of another element (such as land use or environmental protection). Most Colorado communities to date have addressed hazard mitigation as a sub-section of the land use element, though this is changing as communities like Manitou Springs are exploring new plan organizations that give increased prominence to hazard mitigation.

The hazards element should include a description of known hazards to the community. For example, “the community’s primary natural hazard threats are from floods, wildfires, and hazardous materials transport.” These statements can be supported by maps of hazard areas and more detailed descriptions of the risk.

Following the description of the hazards and risk, the hazards element should identify a hierarchy of goals, policies, strategies, and actions tailored to the specific hazard risks in the jurisdiction. While these will vary by community, a range of sample language is included below representing common approaches seen throughout Colorado.

- **Example Goals**

- Reduce the impacts from [insert hazards] on [insert community] residents.
- Reduce the risk of natural hazards on people, property, and the environment.

Hazard Mitigation: Integrating Best Practices into Planning

American Planning Association – Planning Advisory Service (PAS) Report 560

This report was the result of lengthy dialogue with APA and FEMA about the increased awareness of the linkages between planning and hazard mitigation principles. The primary author, James C. Schwab, AICP, walks through the various approaches to incorporate hazard mitigation into planning and policy mechanisms, provides background on the planner’s role in hazard mitigation, and discusses how to integrate hazards into several planning implementation tools. This valuable resource guide also explores several case studies throughout the country that are illustrative of the report’s recommendations.

Chapter 3 of the report is dedicated to integrating hazard mitigation throughout the comprehensive plan. In that chapter, Schwab articulates the importance of not only including a hazard element in the plan, but to identify throughout other elements how hazards are interrelated. The report makes recommendations for integrating hazard mitigation into the specific elements, including: future land use, conservation, public facilities and services, transportation, capital improvements, housing, historic preservation, economic development, recreation and open space, environment/natural resources, and implementation.

PAS 560 can be accessed here: [fema.gov/media-library/assets/documents/19261](https://www.fema.gov/media-library/assets/documents/19261)

- Increase public awareness of hazard risks.
- **Example Policies**
 - Limit building in high-risk areas.
 - Direct future growth to low-risk areas.
 - Improve public education and awareness campaigns as well as proactive warnings for natural hazards.
 - Review and designate appropriate uses and intensities of land uses within known hazard areas.
 - Improve mapping of hazard risk.
 - Planning staff should coordinate regularly with emergency management staff to identify cross-beneficial projects and avoid any potentially conflicting goals or strategies.
- **Example Strategies and Actions**
 - Expand mapping, regulations, and loss-prevention for areas with high risk to hazards.
 - Update subdivision regulations to include criteria for potential hazard areas.
 - Identify data needs to effectively identify high-risk areas and better manage development and activities within the community.
 - Update zoning code to reflect appropriate land uses and intensities within known hazard areas.
 - Update development application submittal requirements to address hazard-related technical reports and mapping analysis.
 - Prevent development on geologically unstable areas or steep slopes.
 - Update subdivision regulations to require defensible space when developing near the wildland-urban interface.
 - Adopt a local wetland ordinance that provides an appropriate buffer distance from water bodies.
 - Revise development regulations to prevent development on slopes greater than 30 percent.
 - Revise development regulations to require adequate mitigation prior to approval of development applications.
 - Require new development to be within a fire district with adequate fire protection facilities, equipment, and service capabilities.
 - Discourage development within areas of high potential for heaving bedrock, as identified on the steeply dipping/heaving bedrock map.
 - Require engineering designs for improvements to roads and utilities to address mitigation of geologic hazards during the subdivision review process.

Adams County is an example of a community that incorporated a specific hazard mitigation section in its comprehensive plan, *Imagine Adams County* (2012). In that section, the county identifies three primary policies:

- Reduce risk and effects of natural and industrial hazards;
- Increase public awareness of hazard risks; and
- Limit building in high-risk areas and improve disaster prevention.

The county also integrated their Hazard Identification and Risk Assessment (HIRA) into the plan, as an appendix. That HIRA includes an in-depth analysis of land uses and their relation to hazards. With a particular focus on hazardous materials, the HIRA appendix compares future land use designations to the number of hazardous materials facilities (*Imagine Adams County, 2012*).

Address Hazard Mitigation throughout the Plan

Often, however, hazard mitigation is not given individual emphasis in a comprehensive plan, but is integrated throughout the plan elements. If a separate hazards element is not included in the plan, the model goals, policies, and strategies from the previous section could be tailored to support other plan elements. Sample considerations and questions to ask for various plan elements are provided below, based in part on issues noted in the FEMA and APA references cited at the conclusion of this section.

- **Land Use.** Establish land-use policies that discourage development or redevelopment within natural hazard areas. Provide adequate space for expected future growth in areas located outside natural hazard areas. Ensure that safety is explicitly included in the plan's growth and development policies.
- **Transportation.** Provide adequate primary, secondary, and emergency connections within and between subdivisions. Ensure road layouts and connections support response requirements for emergency services. Consider whether transportation policy is used to guide growth to safe locations.
- **Conservation/Resource Protection.** Identify areas that are community and natural assets and also that, when protected or restricted to development, would reduce risk to natural hazards. For example, avoiding development in forested areas provides a tangible resource to the community while also reducing exposure of people and structures to wildfires.
- **Economic Development.** Communicate the short- and long-term economic benefits of planning for hazards and developing resilient communities (e.g., lower long-term infrastructure repair costs). Evaluate whether economic development policies promote commercial or industrial expansion in areas vulnerable to hazards. Make community resilience a key feature in attracting, expanding, and retaining businesses and industry.
- **Public Facilities.** Identify appropriate locations for all public facilities, but especially critical facilities whose continued operation is essential during or following a major hazard event. For example, police and fire stations, water treatment plants, and community centers are important facilities that should not be located in hazardous areas.
- **Housing.** Ensuring that the location and design of new or improved housing complies not only with existing building codes, but with potential hazards in mind. Identify opportunities to strengthen or replace structures identified as vulnerable to hazards. Consider whether a disproportionate amount of affordable housing is located within known hazard areas. Address the challenges communities face in locating dense residential areas away from hazards. One particular challenge to consider is that some of the most desirable places to live can often be within hazard areas (forests, oceans, slopes, and rivers).
- **Recreation and Tourism.** Areas that serve as recreation opportunities (such as trails and bike paths) can also serve hazard mitigation purposes by limiting development. This element could also include recommendations for land acquisition. Recreation and tourism, especially as it relates to hazard mitigation, can also be addressed in parks and open space or natural resources elements depending on the plan organization.

Douglas County is an example of a community that has taken this approach. The *Douglas County 2035 Comprehensive Master Plan (2014)* addresses geologic hazards, flooding, and wildfire. There are a series of goals and policies related to hazards in the environmental quality sections, and additional relevant policies scattered throughout the plan. For example, wildfire is addressed in the urban land use section of the plan, the non-urban section of the plan, and in the environmental quality section of the plan (where an entire subsection is dedicated to wildfire) (*Douglas County 2035 Comprehensive Master Plan, 2014*). As with Adams County, the hazard components of the plan are accompanied by a map, providing additional justification for future land use decisions.

Based on current research, more Colorado communities emphasize hazard mitigation as a discrete section in their comprehensive plans than choose to weave hazard mitigation through various plan elements. However, new plans are always underway. As of August 2015, the City of Longmont and the Town of Milliken were both in the process of developing comprehensive plans with a resilience component. The City of Manitou Springs is embarking on an integrated planning process for a hazard mitigation plan and a comprehensive plan that will weave hazard-related issues into all plan elements. Users of this guide should check back with those communities to review the method in which hazards are addressed in those plans.

Identify Hazards on the Future Land Use Map

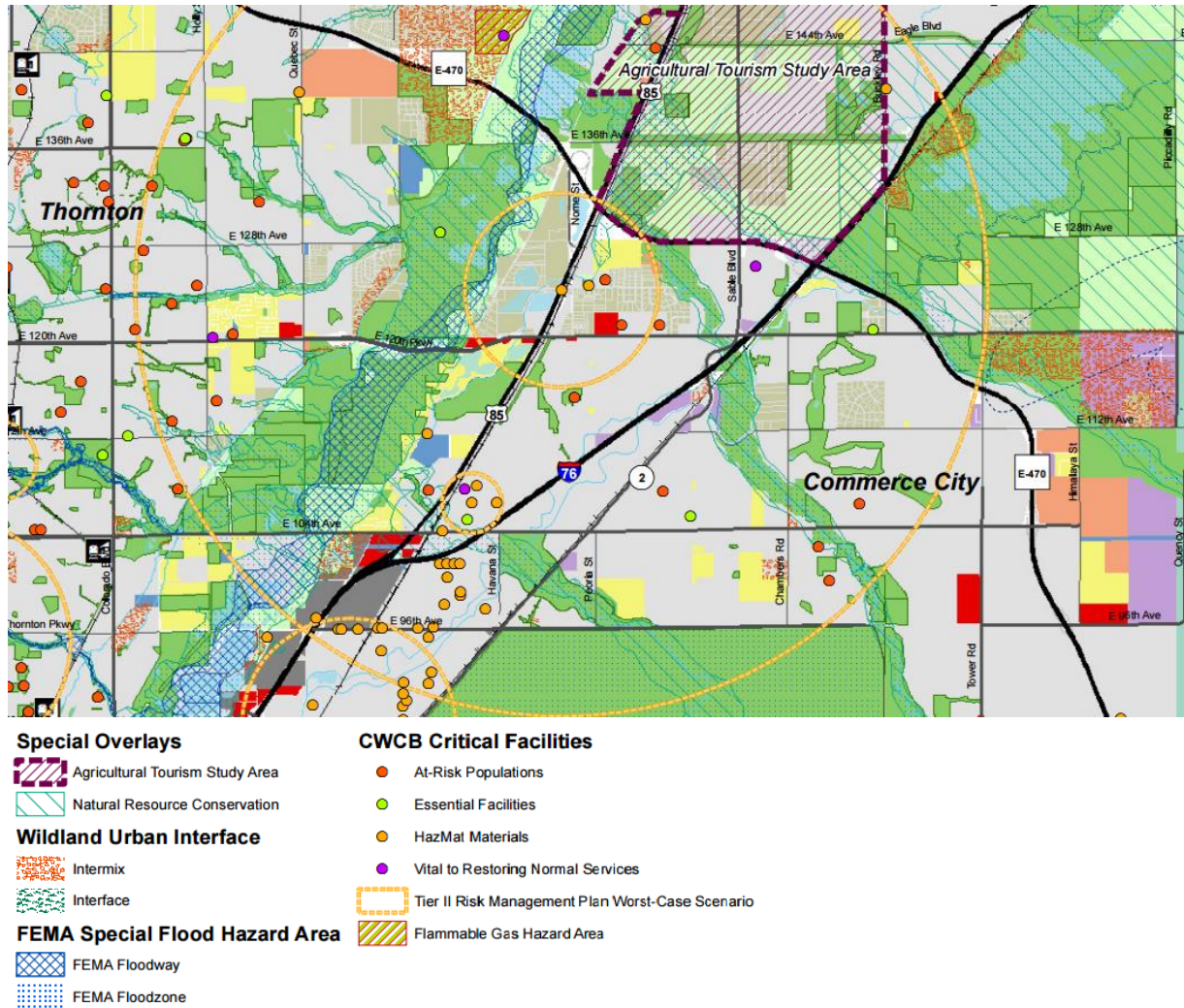
The future land use map illustrates how the community intends to grow over time. It identifies appropriate areas for growth and development, often accompanied by supporting details such as types of land uses and appropriate densities. Future land use maps can be helpful tools to guide community officials when making decisions about development proposals. A clear future land use map can also set the stage for regulatory changes that support the stated policies of the comprehensive plan. Showing known hazard areas on the future land use map provides maximum transparency to a community's citizens and decision-makers.

Future land use maps are typically either **parcel-specific** or **character-based**. Parcel-specific land use maps show the desirable types of land uses for specific detailed sites. These can be helpful for making future zoning and planning decisions, but they require upfront evaluation of specific areas that may not be possible as part of a broad, community-wide planning process. Character-based maps show conceptually which general areas, nodes, or corridors within a community are appropriate for various types of uses. They are less detailed than parcel-specific maps in describing specific uses and parcels; that allows for more flexibility to evaluate specific development proposals, but also provides less predictability.

It is important to ensure that future development patterns are consistent with known hazard areas. For example, areas marked for "higher density residential development" should not overlap with floodplains, the wildland-urban interface, or areas with steep slopes. The future land use map can work in concert with an adopted hazard mitigation plan to ensure that the map promotes safe growth and reconciles any conflicts between development strategies and mitigation strategies.

However, including hazard areas on a future land use map can be challenging, both technically and practically. There are multiple variables and criteria typically reviewed to determine land development suitability. The goal usually is not to restrict all development opportunity in hazard areas, but rather to use the best available data to determine the severity of the risk, mitigation requirements for development, and appropriate use of land within or near different hazard areas.

Adams County is an example of a community that has prepared a future land use map that explicitly addresses hazard risks. The Imagine Adams County Plan future land use overlays floodplains, the wildland-urban interface, and flammable gas hazard areas with future land use. An excerpt of the map is below:



A portion of the Adams County future land use map in their 2012 Comprehensive Plan includes floodplains, wildland-urban interface, and other resource protection areas. The map also shows critical facilities.

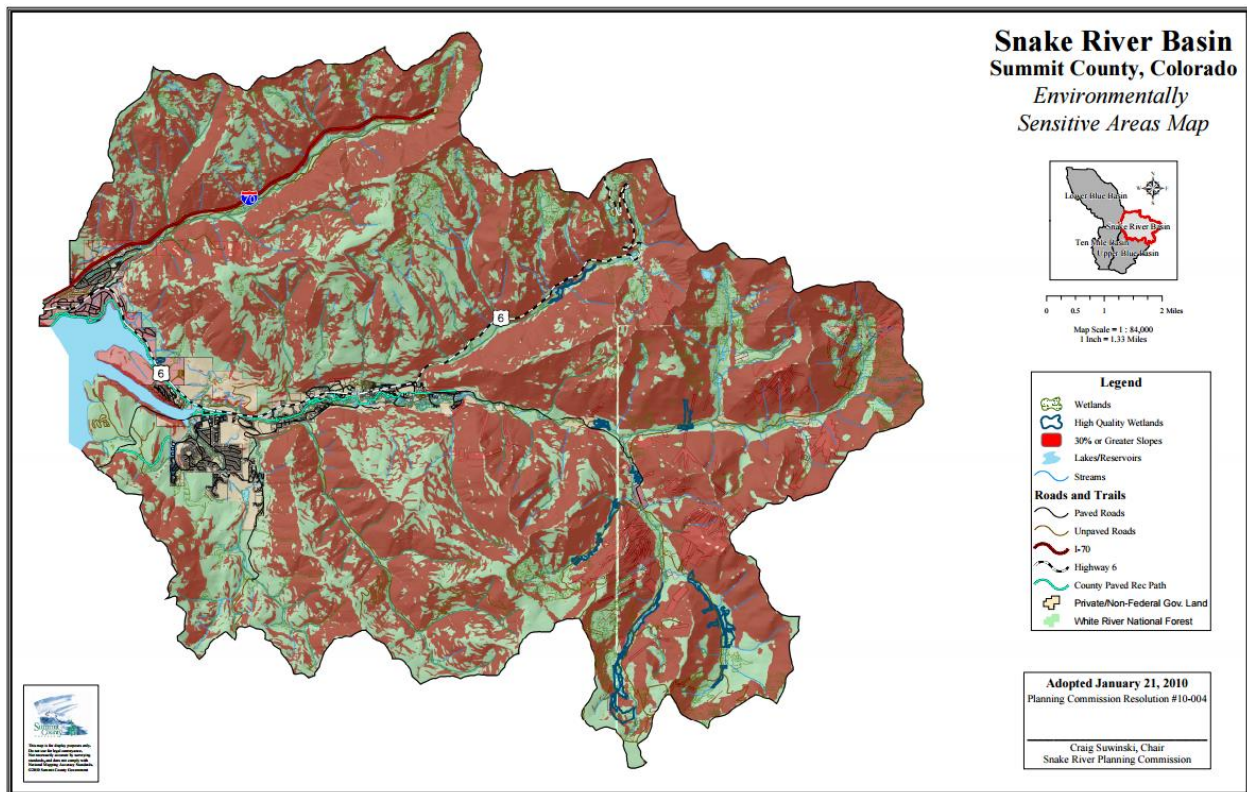
Source: Imagine Adams County (2012)

Address Hazards in Subarea Plans

Many communities prepare area-specific plans as a supplement to their jurisdiction-wide comprehensive plans. These subarea plans can be at various scales and are prepared for a variety of reasons. For example, a neighborhood plan might address housing issues, whereas a corridor plan might address mobility and economic development. Some area plans are created with the primary purpose of protecting environmentally-sensitive areas or to ensure appropriate hazard mitigation.

One such example is the *Snake River Master Plan* in **Summit County**. Adopted in 2010, the plan addresses flooding, avalanche hazards, steep slopes and other geologic hazards, wildfire, and hazardous materials transport in various sections. Even the affordable workforce housing element addresses wildfire hazard by stating that “development [in Keystone Gulch] should occur in a manner that to the extent reasonable: mitigates wildfire hazard...” (p. 36).

Appendix C in the *Snake River Master Plan* includes architectural and environmental design standards for the basin. The first goal in that appendix includes a policy that development shall generally seek to avoid slopes over 30 percent and 100-year floodplains. Maps that accompany the *Snake River Master Plan* also identify hazardous areas. The map below illustrates environmentally sensitive areas in the Snake River Basin, including 30 percent or greater slopes (shaded in red).



The Snake River Master Plan includes this map showing environmentally sensitive areas in the basin. Slopes greater than 30 percent are shaded in red on this map.

Source: *Snake River Master Plan* (2010)

Several other examples of subarea plans addressing hazards exist in Colorado, including in Pitkin and El Paso Counties, and the Town of Gypsum.

Link the Comprehensive Plan and Local Hazard Mitigation Plan

Another way to effectively integrate hazard mitigation into the comprehensive plan is to incorporate language directly from the local hazard mitigation plan, if one exists. This means incorporating information from the HIRA, such as the description of hazards that could impact the community, identifying specific geographic areas with higher risk, and discussing how vulnerable populations

should be addressed. Communities can also incorporate specific mitigation actions from the local hazard mitigation plan by aligning them with related plan policies and actions.

The comprehensive planning process should include subject matter experts that can help strengthen the plan as it relates to hazard mitigation. Conversely, the local hazard mitigation planning process should include land use planners that can evaluate and develop feasible mitigation solutions as they relate to land use planning.

Attach the Hazard Identification and Risk Assessment (HIRA) to the Comprehensive Plan

Another approach to ensure direct coordination between the local hazard mitigation plan and the comprehensive plan is to directly attach the HIRA portion of the hazard mitigation plan to the comprehensive plan as an appendix. This ensures that both documents are aligned and elevates the importance of hazard mitigation in the community's overall planning policy document.

However, there are some unique challenges associated with this approach:

- The local hazard mitigation plan is on a five-year time horizon, so updates are typically done at regular intervals. The comprehensive plan may have shorter or longer timeframes, so the hazard identification and risk assessment may have to be adopted as a separate amendment to the comprehensive plan upon FEMA approval of the updated local hazard mitigation plan.
- The hazard identification and risk assessment can be lengthy. It is common for the HIRA to exceed 200 pages. A comprehensive plan is typically a much shorter document, often under 100 pages total.

Cross-Reference Other Hazard Plans in the Comprehensive Plan

Incorporating the HIRA or other hazard plans through cross references allows such documents to be identified in key sections of the plan but avoids overwhelming the comprehensive plan with the entirety of hazards information.

For example, the **Glenwood Springs** Comprehensive Plan, adopted in 2011, includes several linkages to relevant hazard mitigation information in the appendices. For example, Appendix 7, Public Utilities and Services, describes the city's Community Wildfire Prevention Plan and also discusses the hillside overlay protection ordinance as a relevant hazard mitigation tool for the city.

ADVANTAGES AND KEY TALKING POINTS

Because the comprehensive plan serves as the overarching policy guidance document for the community, there are several advantages for developing a plan that integrates hazard mitigation:

- The planning process typically involves a large audience, including the general citizenry, interdepartmental staff, and other stakeholders from the community, allowing for increased public outreach and engagement on hazards.
- The process typically looks at future land uses to determine what is best for the community.
- Compliance with the comprehensive plan is often tied to approval criteria for development applications.
- Allows for integration of other policy documents that address hazards into one unified location.

CHALLENGES

The comprehensive planning process is an all-encompassing document; therefore, communities have to strike a balance between including policies related to every topic, and maintaining a user-friendly and concise document. This means that the comprehensive plan may not always be the only place to look for policy direction on any one given issue. In the case of hazard mitigation, the comprehensive plan must be used in concert with the Local Hazard Mitigation Plan (if such plan exists). Other challenges include:

- Developing a comprehensive plan, or comprehensive plan update, can be time intensive.
- Comprehensive plans must be updated periodically to match shifts in policy direction related to specific elements.

KEY FACTS

Administrative capacity	Planner lead, with support from other departments such as public works, parks, engineering, finance, and others
Mapping	Some technical mapping and GIS analysis may be required for integrating hazard areas into the future land use map
Regulatory requirements	None required, but can support plan implementation
Maintenance	Should be updated at a regular time interval, or sooner if conditions in the community warrant a change; if a hazard mitigation plan is submitted for FEMA approval, five-year updates are required
Adoption required	Yes, typically adopted by the planning commission, and ratified by the elected body
Statutory reference	C.R.S. § 30-28-106 (counties) C.R.S. § 31-23-206 (municipalities)
Associated costs	Staff time, plus potential costs for mapping or other technical work, public outreach activities, and consultant services

EXAMPLES

Adams County Comprehensive Plan	adcogov.org/DocumentCenter/View/2785
Town of Bennett Comprehensive Plan	plan-tools.com/PDFs/20111020-Bennett-Plan-Doc.pdf
Town of Crested Butte Community Plan	crestedbutte-co.gov/vertical/Sites/%7B6058FFBB-CB06-4864-B42F-B476F794BE07%7D/uploads/PartIII-p60-93.pdf
Douglas County Comprehensive Master Plan 2035	douglas.co.us/documents/full-cmp.pdf

Glenwood Springs gwsco.gov/DocumentCenter/View/133
Comprehensive Plan

Logan County colorado.gov/pacific/sites/default/files/Master%20Plan%202011.pdf
Master Plan

City of Steamboat Springs steamboatsprings.net/DocumentCenter/View/1797
Area Community Plan

FOR MORE INFORMATION

American Planning Association: Hazard Mitigation: Integrating Best Practices into Planning (PAS 560)

fema.gov/media-library/assets/documents/19261

FEMA: *Integrating Hazard Mitigation into Local Planning: Case Studies and Tools for Community Officials* (March 2013)

fema.gov/media-library-data/20130726-1908-25045-0016/integrating_hazmit.pdf