



FEMA

PLANNING FOR FUTURE CONDITIONS

Is Your Community Ready?

The 2010s were a landmark decade for natural disasters. For example, relentless rains overtopped levees and flooded farms and towns along the Mississippi. The Camp Fire in California and thousands of other blazes across the west caused record damage to buildings and infrastructure. And millions lost power and were evacuated during Hurricanes Harvey, Irma, and Maria. The disaster activity we have seen will continue. We can prepare for changing disaster risk by planning for future conditions, but we have to start now.

The Time to Plan for Future Conditions is Now

One way to keep families, businesses, and neighborhoods safe from natural disasters is long-term planning. Communities that invest in long-term planning and forward-looking projects will see fewer impacts and are more likely to recover quickly after severe events. Preparing for the future today supports growth and health for years to come.

As weather and development patterns change, local plans and projects must address the changing risks of future disasters. This affects hazard mitigation plans, comprehensive plans, and more. The cycle of risk involves damage, rebuilding, and repeated loss. Long-term planning helps break this cycle.

DISASTER RISK IS CHANGING ALMOST EVERYWHERE

Changing weather patterns have made many types of disasters more frequent and extreme. While every community will see different impacts, every place in the United States is affected.



DROUGHT: As temperatures climb, higher evaporation rates make droughts worse. Severe droughts can threaten drinking water supplies and disrupt agriculture.



HEAVY RAIN & FLOODING: In many regions, more frequent and intense rains are leading to more severe flooding. Intense rain can trigger flash flooding and make rivers overflow. Saturated soils also create the perfect conditions for landslides and mudflows.



COASTAL FLOODING: Rising sea levels contribute to more frequent and intense coastal floods and storm surge. Even on sunny days, high-tide floods are becoming more frequent and reaching farther inland. As tides inch higher, hundreds of U.S. coastal communities will face chronic, disruptive flooding that will directly affect homes, lives, and properties.



WILDFIRES: Warm temperatures are more common, and intense droughts create the conditions for more wildfires. The 2019 wildfire season was the most extreme in California's history.



EXTREME HEAT & COLD: The annual number of very hot and cold days is growing. Extreme heat is now affecting areas of the country that are unfamiliar with this hazard. Of all weather-related hazards, extreme heat often causes the highest number of deaths each year.



SEVERE WEATHER: Warmer, wetter conditions provide more energy for thunderstorms and tornados. In the future, more states may be affected. Some research shows that the impact of tornados is slowly creeping east.



TROPICAL WEATHER: Warm ocean waters fuel the energy of tropical weather. The Gulf Coast, Southeast and Mid-Atlantic are seeing more destructive tropical storms and hurricanes.

DEFINING FUTURE CONDITIONS

“Future conditions” means how things will be in the future. Changes in weather patterns, average temperature, and sea levels can bring more extreme storms, droughts, wildfires, and other natural disasters to your community. In addition, how your community uses and develops the land can put more people, businesses, and homes in harm's way. These changes can bring greater risk to the people who live and work in your community.

For more information on how future conditions could affect disaster risk in your community, see the [Explore Resources](#) section.

BUILD RESILIENCE WITH YOUR HAZARD MITIGATION PLAN

Hazard mitigation planning identifies long-term policies and actions to reduce damage and losses. Use your plan's risk assessment and mitigation strategy to build resilience. Address the impacts of future conditions through your planning process.

Steps for Addressing Future Conditions in Your Risk Assessment

- **Describe hazards:** How could future conditions affect each natural hazard profiled in your plan? Describe the location, intensity, and duration of those effects. The detail will depend on the data and resources available. If you have local information, you can make more precise projections. If not, make qualitative projections based on national or regional information.
- **Identify community resources:** Use the projected hazards to see which resources may be at risk in the future. Do this for each natural hazard. Resources can include neighborhoods, business corridors, historic districts, and natural systems.
- **Analyze risks:** Think about resources that may be at risk. Describe the possible impacts of each future hazard. How serious could your community's loss be, both right after the disaster and in the longer term? Also consider impacts on all sectors, including housing, infrastructure, emergency management, land use and development, health and social services, and natural and cultural resources.
- **Summarize vulnerability:** Use the risk analysis to list your main vulnerabilities. Share the list with elected officials and decision-makers. Create a mitigation strategy with this information.



Tips for Addressing Future Conditions in your Mitigation Strategy

The four basic types of mitigation actions are described below. Understanding future disaster risk can strengthen each type of action.



Structure & Infrastructure Projects

These actions protect structures and infrastructure by changing them or removing them from danger. Use the projected hazards for your community to prioritize projects that keep structures safe as risks evolve.



Outreach & Education Programs

These actions inform and educate the community. They increase people's awareness of hazards and of ways to mitigate risk. By including future conditions, you can help your community invest in choices that protect lives and property for a longer time.



Local Plans and Regulations

These actions include policies or codes that influence the way land is developed and structures are built. With knowledge of future risks, you can change your plans, policies, and building and development codes. That will reduce the community's vulnerability.



Natural Systems Protection

These actions minimize damage and losses. They can also save or restore the benefits of natural systems. Identify the people and places that may be vulnerable to future disasters. Use those to set priorities. Conserve natural systems that will be at risk or that protect areas of future risk.

SEE WHAT OTHERS ARE DOING

Baltimore chose to add future risks to its 2013 and 2018 Hazard Mitigation Plans. The 2018 plan relates future conditions to heat waves, sea levels, precipitation, and flooding.

[2018 Disaster Preparedness and Planning Project](#)



BUILD RESILIENCE WITH YOUR COMPREHENSIVE PLAN

A community's comprehensive plan expresses its vision for the future. It is a blueprint for long-term building and growth. In many places, the plan is the foundation for zoning, subdivision, and land development regulations. By addressing future conditions in your comprehensive plan and related regulations, you can:

- Direct new development away from future hazard areas,
 - Protect existing development from changing disaster risks, and
 - Strengthen families, businesses, and neighborhoods to withstand future events.
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Tips for Addressing Future Conditions in Your Comprehensive Plan

Most comprehensive plans identify goals and strategies for different planning elements. To build your community's resilience, you could create a new element dedicated to future disaster risks. Another option is to address future conditions within existing elements, such as the following:

- **Land Use:** Use projected changes to hazard areas to inform a future land use map. This map shows where the community would like homes, businesses, farms, open spaces, and other land uses to be in the future (often in 20-40 years). Knowing how high-hazard areas may change in the future can help target those areas for preservation or lower development densities and can help inform evacuation routes. Smart growth is one strategy to limit development in a high-hazard area.
- **Transportation:** Use projected changes to hazard areas to inform major transportation improvements and prevent future safety and capacity issues. Goals and strategies for the transportation element can be used to direct major highway and transit service away from high-hazard areas. They can also enhance the safety and capacity of existing infrastructure.
- **Natural Resources:** Preserving natural resources can reduce the risks of many different hazards. Conserving wetlands, beaches, and dunes can reduce storm surge impacts. Preserving woodlands from development can reduce the impacts of wildfires. Protecting agricultural soil health allows soil to soak up more water, which can help improve water quality and reduce the impacts of flood events. Use projected changes to the location, intensity, and duration of natural hazards to prioritize conservation efforts. In some cases, you may need to actively manage natural resources to sustain their functions under future conditions.
- **Economic Development:** Under future conditions, your community's economy may become more vulnerable to natural disasters. In some coastal communities, for example, tourism in waterfront areas is critical. A disaster that disrupts this activity could slow the community's recovery. Knowing this, develop goals and strategies that protect your key economic drivers or diversify economic activity.

Other Plans and Planning Tools

You can also integrate your assessment of future disaster risks into other plans. Consider capital improvement plans, area plans, and operational plans, such as emergency operations. Ideally, this integration will drive changes in zoning ordinances, subdivision and land development codes, building codes, and public investments, which will help keep your community safe for years to come.

Planning goals and strategies are usually tied to a timeframe, such as 20 years, 50 years, or 100 years. When planning for future conditions, consider the appropriate timeframe for each goal and strategy. The appropriate timeframe could depend on the types of hazards you are planning for, the lifespan of any proposed investments, or the terms of any financing options.

There is no fixed formula or single right way to incorporate future conditions into your community's plans. You can plan for future conditions across many types of community planning. What's most important is to start where you have an opportunity, and to keep thinking about what the long-term implications of plans and projects may be. Take actions in as many ways as possible to help benefit your community long term.

SEE WHAT OTHERS ARE DOING:

The University of North Carolina, Asheville, prepared a Climate Resilience Report. It assessed flood, landslide, drought, wildfire, and other hazards. The city used this report to shape its 2018 comprehensive plan, Living Asheville. The plan advised strategies for climate-related weaknesses in each area of the city.



EXPLORE RESOURCES

Long-term planning for future conditions is an emerging practice. Each year, there are more resources to help you understand and prepare for the future.

Learn About Your Changing Disaster Risk

[Climate Central Extreme Weather Toolkits](#) – These toolkits connect the extreme weather in your region to future conditions. The kits have profiles of eight types of extreme weather. They make scientific research on future conditions more accessible.

[Climate Impact Lab](#) – This website features a Climate Impact Map. Users can see future conditions in the next 20 years, by mid-century, and at the end of the century.

[Data.Gov](#) – This website's climate section has information on changing weather and climate. It describes how future conditions might affect assets and vulnerability.

[NOAA Digital Coast Portal](#) – This website is for the coastal management community. It contains visualization and predictive tools, and tools that make data easier to find and use. Top tools include the Sea Level Rise Viewer and the Flood Exposure Mapper.

[U.S. Climate Resilience Toolkit](#) – This toolkit guides communities to find and document hazards related to climate. It helps them develop workable solutions to reduce risks.

[USDA Natural Resources Conservation Service and Climate Change](#) – These resources provide detailed insight on how agriculture and soil impact climate change through interactive activities and features.

[USGS Coastal Change Hazards Portal](#) – This website features an interactive map using coastal change data for our nation. It has information on three coastal change hazards: extreme storms, shoreline change, and sea level rise.

Plan for Future Disaster Risk

[Adaptation Clearinghouse](#) – This database lets users explore ways to adapt to future conditions. Planning, education, laws, and regulations are discussed. It also describes funding and case studies. The Emergency Preparedness page has resources for hazard mitigation planning.

[Climate Adaptation Knowledge Exchange](#) – This website features climate adaptation studies and resources. It shares lessons, ideas, and opportunities to adapt. Resources are listed by topic, region, and adaptation phase.

[FEMA's Hazard Mitigation Planning Program](#) – This page introduces hazard mitigation planning and its benefits and provides resources for hazard mitigation planning in your community.

[Local Mitigation Planning Handbook, Safe Growth Audit](#) – One appendix in this FEMA resource is a Safe Growth Audit. This four-page worksheet helps identify gaps in a community's growth guidance tools. With this knowledge, users can reduce risks to future development.

[Sustaining Places Initiative](#) – This resource is from the American Planning Association. Its [comprehensive plan standards](#) are designed to create livable, healthy communities in harmony with nature. The standards also help communities address future conditions in their comprehensive plans.