JULY 2026 | VOL. 43, NO. 7

APA

ZONING PRACTICE

Unique Insights | Innovative Approaches | Practical Solutions

Putting Coastal Hazards Overlay Districts on the Map

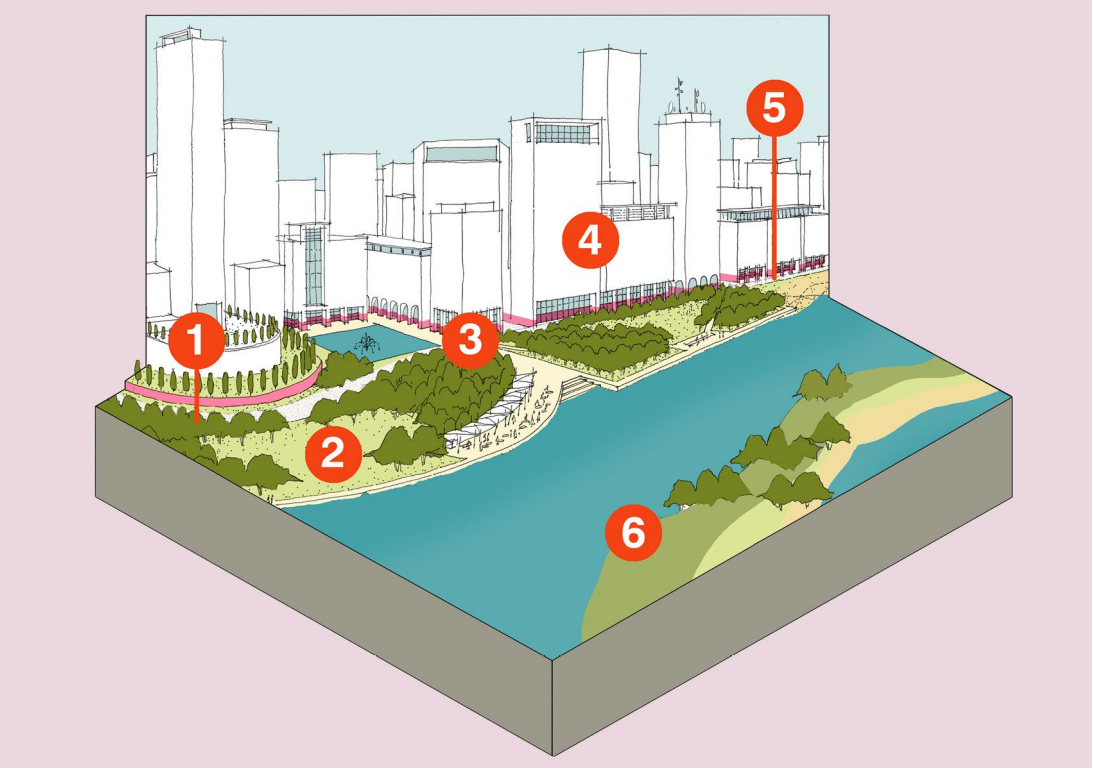
In this Issue:

Putting Coastal Hazards Overlay Districts on the Map

By Gavin Smith, PHD, FAICP, with Allison Anderson, David Perkes, Ryan Anderson, Chitali Biswas, Georgia DeWitt, Cassie Nichols, and Matt Lambert

Planners working in coastal communities know that the impacts of natural hazards are increasing. Factors contributing to this reality include rapid growth in high-hazard areas and preexisting public and private investments in places that are prone to hurricanes, nor'easters, flooding, coastal erosion, and subsidence. Adding to this threat are more intense, slower-moving, water-laden coastal storms and sea level rise associated with a changing climate. These conditions necessitate applying flexible planning tools and a diversity of options undertaken at multiple scales (i.e., site, neighborhood, jurisdiction, and region) that can be used to address both current and future conditions, thereby creating more resilient places.

Coastal hazards overlay districts provide a comprehensive and flexible approach to reducing coastal hazards risk and adapting to a changing climate. This technique, which can help to address existing regulatory gaps, has been used



Potential design standards and planning techniques to reduce hazard risk and adapt to a changing climate in an oceanfront downtown context. 1: Harden or relocate infrastructure including roadways and utilities. 2: Oceanfront setbacks—relocate buildings and restore ground plane with absorptive greenspace. 3: Use setback space for temporary and mobile functions, recreation, stormwater storage. 4: Create a corniche along the waterfront with floodgates between structures. 5: Decommission the first floor or dry floodproof the lower level. 6: Living breakwaters nearshore to deter storm surge. (Credit: unabridged Architecture)

in coastal cities like Norfolk, Virginia, and is slowly gaining traction in other places in both the U.S. and abroad

This issue of *Zoning Practice* describes how planners can use coastal hazard overlay districts to make their communities more resilient in the face of natural hazards, disasters, and a changing climate. It discusses the origins and key features of this new type of district before exploring key planning, regulatory design, and implementation considerations.

Defining the Coastal Hazards Overlay District

The coastal hazard overlay district (CHOD) draws from a well-recognized land use planning technique, the overlay district, in which geospatially defined areas are identified and additional design standards and planning techniques are applied. However, there are several features that distinguish the CHOD from single-purpose overlay districts, and these features are rooted in decades of coastal resilience research and practice.

Background

The CHOD concept, as fully described in the ***Coastal Hazards Overlay District Guide***, is the culmination of nearly 20 years of research, design, and testing. Following Hurricane Katrina, the Mississippi Governor's Commission on Recovery, Rebuilding and Renewal, in partnership with the Congress for New Urbanism, initiated a two-week design charrette to help 11 coastal communities develop post-disaster, form-based plans to assist with rebuilding (MRF 2005). During this charrette, I worked alongside several researchers and practitioners who would help shape the CHOD concept.

Years later, I collaborated with two of these participants, David Perkes, a faculty member at Mississippi State University's College of Art and Architecture and Director of the Gulf Coast Community Design Studio and Allison Anderson, Principal at unabridged Architects, to develop a prototype for the CHOD, the Hazard Transect Overlay District. In our resulting journal article, we modified the new urbanist transect to depict distinct coastal zone environments that would benefit from differing design standards and planning techniques (2021). In our conclusion, we called for more research to flesh out the concept, which ultimately led to the creation of the Coastal Hazards Overlay District Guide.

The CHOD team relied on several research methods to develop the guide. First, we reviewed relevant literature on overlay district zoning and prior research tied to the origins of the concept. Then, we developed case studies of 13 coastal jurisdictions that illustrated specific contextual challenges and policy responses. Next, we identified three coastal communities in Mississippi and Alabama to serve as test beds for our CHOD ideas. Lastly, we developed a matrix to categorize 51 potential design standards and planning techniques across broader resilience strategies.

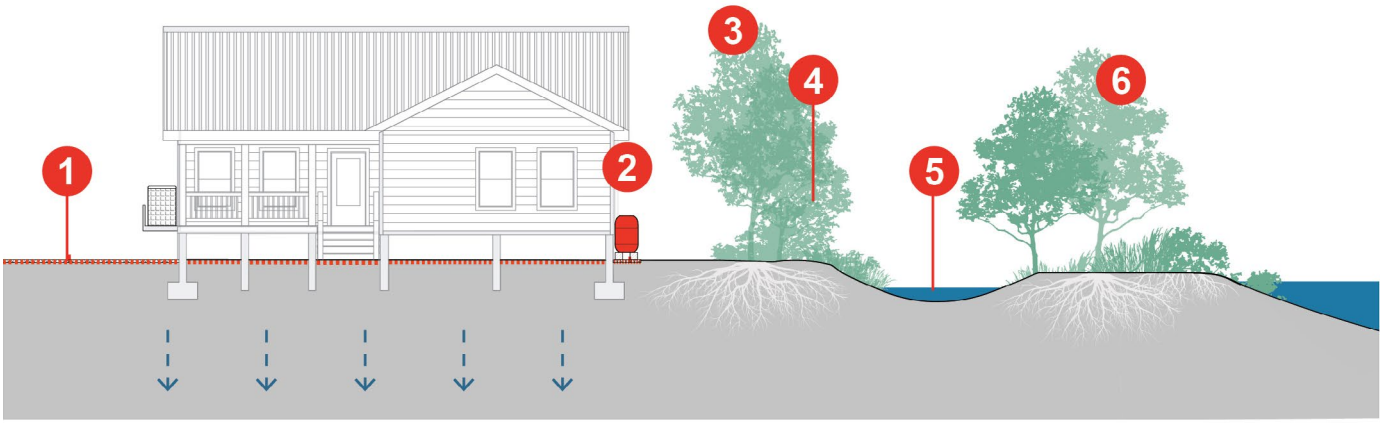
The resulting guide comprises a set of interrelated resources to assist users with CHOD implementation. These include case studies, process diagrams, matrices, checklists, design standards and planning techniques, call-out boxes, and appendices.

Distinguishing Features

Unlike single-purpose overlay districts, the CHOD emphasizes the consolidation of techniques (applied at differing scales) that address multiple hazards present in the coastal zone (i.e., storm surge and riverine flooding, coastal erosion, subsidence, and sea level rise). It also acknowledges three ecologically and geologically defined spaces: oceanfront, sound (tidal), and riverine environments. Finally, it matches standards to four broader strategies: avoidance, accommodation, protection, and community-led relocation.

Unlike single-purpose overlay districts, the CHOD emphasizes the consolidation of techniques (applied at differing scales) that address multiple hazards present in the coastal zone (i.e., storm surge and riverine flooding, coastal erosion, subsidence, and sea level rise).

Understood relative to natural hazards, disasters, and a changing climate, coastal areas face differing hazard threats, and as



Potential design standards and planning techniques to promote resilient landscape design, which can be implemented across a variety of scales, from residential lots to open public spaces. 1: Permeable paving allows water to infiltrate the ground on-site. 2: Rainwater catchment stores water and reduces runoff. 3: Consider the potential for trees to become falling hazards as well as their ability to intercept and diffuse winds and capture waterborne debris. 4: A buffer of native plants provides a soft line of defense. Because native plants are suited to their environmental conditions, they establish vigorous and hardy root systems that inhibit erosion and recover quickly after disturbances. 5: A retention pond slows and stores storm- and floodwaters. 6: Select salt-tolerant species where coastal flooding is a threat. (Credit: GCCDS)

such, communities may choose from varied design standards and planning techniques based on these characteristics. Furthermore, the techniques applied in these areas or zones should reflect existing and proposed settlement patterns and government regulations tied to policies, plans, ordinances, and building codes.

Key Terminology

The following terms, drawn from the Coastal Hazards Overlay District Guide, are foundational to the CHOD concept.

Hazard mitigation. The adoption of techniques, projects, and policies to reduce the adverse effects of natural hazards on people and property. Ideally these steps are taken before a disaster occurs, although it is not uncommon for communities to take action to reduce future hazard-related losses during the disaster recovery process.

Adaptation. Adjusting to future projections of climate conditions, to include taking actions now, and in the future, to reduce the negative impacts of a changing climate on people, property, and the environment that are manifest as natural hazards.

Maladaptation. Actions that include individual, public, and private sector choices, policies, projects, and investments that increase the exposure and vulnerability of individuals, communities, and jurisdictions to the impacts of climate change.

Avoidance. A proactive strategy that prevents development from occurring in hazard-prone areas based on current and projected hazards, including those tied to a changing climate.

Protection. The shielding of development from the impacts of natural hazards, which typically involves the construction of engineered structures like levees or seawalls.

Accommodation. Actions that allow for the continued use of hazard-prone areas through adaptive engineering and design-based techniques that mitigate the level of damage sustained by chronic and extreme events.

Community-led relocation. The purposeful movement of people, buildings, and infrastructure out of hazard-prone areas.

Planning for Uncertainty in the Coastal Zone

There are several reasons for communities to add a new CHOD to their existing regulations. However, to be successful, communities must have a clear vision of the strategy or strategies they want to pursue. Furthermore, communities will need to contend with practical implementation

issues and how a CHOD would relate to their approach to zoning.

Rationale for a New Type of Overlay District

Our coasts are among the most vulnerable locations in the United States to the impacts of natural hazards, disasters, and climate change. The dynamism of the coastal zone, including geophysical, environmental, social, and economic changes, make this area a prime location to develop planning approaches that can address these changes over time. Furthermore, communities have at their disposal several mature risk-reduction and planning techniques to address flood and coastal-hazard threats, rapid development, and rising losses, including those losses tied to disasters and increasing numbers of "sunny-day" flood events.

Overlay Districts Are a Well-Tested Technique.

Planning for uncertainty (in era of climate change) is becoming increasingly prescient and an overlay district provides a well-tested land use planning technique that can address important issues surrounding the presence of human settlement in known hazard areas, while providing a range of risk reduction and climate change adaptation measures (described here as design standards and planning techniques) that can be tailored to unique local conditions.

Overlay Districts Are Flexible and Anticipatory.

The use of an overlay district provides a degree of flexibility for local governments to modify both the district boundaries and the use of varied design standards and planning techniques over time. The options selected should be seen as anticipatory, providing a forward-looking strategy based on evolving information (including community input and emerging analytical tools like the downscaling of climate data) while striving to avoid maladaptation.

A fundamental question for coastal jurisdictions is "what is the appropriate design standard in an era of climate change?" Design standards and planning techniques that are informed by the 100-year or one percent chance annual flood, for instance, are no longer adequate, particularly in the coastal zone. Overlay districts provide a tool to adapt design standards over time as conditions change.

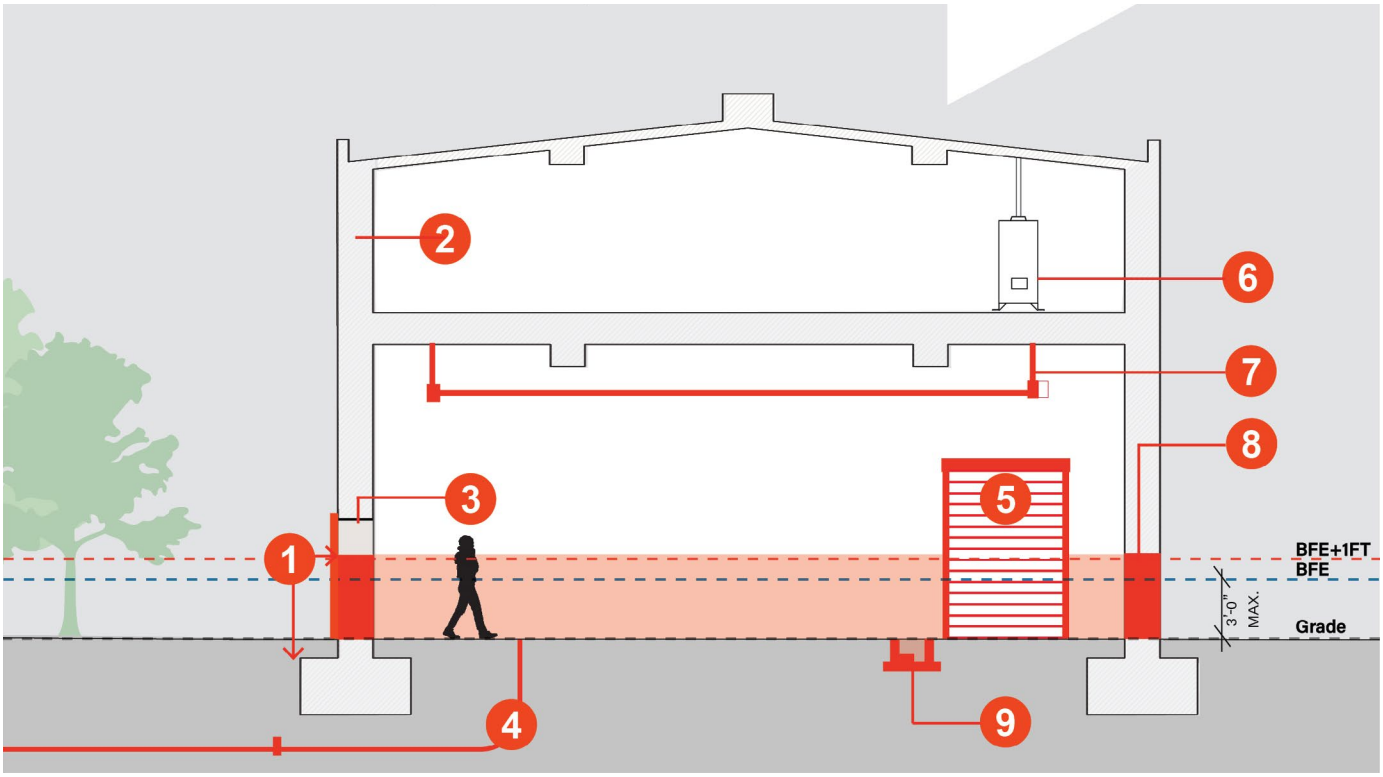
Diverse Risk-Reduction Techniques Make Communities More Resilient.

Overreliance on a singular risk reduction technique is shortsighted and sometimes maladaptive in the long run. For instance, overreliance on a protective levee or seawall can place significant numbers of people and property in harm's way, creating a false sense of security leading to more intensive development. Planning scholar Ray Burby refers to this phenomenon as the "safe development paradox" (2006). There is also a growing discussion about community-led relocation as a singular risk-reduction and climate change adaptation strategy. An overreliance on this approach fails to recognize the realities of both deep place attachment and large financial investments in coastal areas tied to water-dependent economies and livelihoods. The overlay district provides an alternative to a reliance on one approach, drawing on a diversity of techniques rather than emphasizing one measure. This is not to suggest that levees or relocation should not be considered, rather they should be seen as options in a more holistic approach.

The dynamism of the coastal zone, including geophysical, environmental, social, and economic changes, make this area a prime location to develop planning approaches that can address these changes over time.

A Multi-Scalar Approach Serves a Larger Set of Stakeholders.

Another important characteristic of the guide is the identification of mutually reinforcing design standards and planning techniques that span multiple scales,



Potential design standards and planning techniques for dry floodproofing. 1: Floodproof construction: A combination of measures that make a building and attendant utilities and equipment watertight and substantially impermeable to floodwater. 2: Reinforced walls and slabs to withstand water pressure and floating debris impacts. 3: Watertight doors and windows. 4: Backflow valve prevents floodwater from entering through sewer and drainage pipes. 5: Substantially impermeable panels to cover doors, windows, and other openings. 6: Electrical equipment raised to flood protection level. 7: Backup emergency power for sump pumps (protected to flood protection level). 8: Paints, gaskets, sealants to reduce water seepage, including around joints and utility penetrations. 9: Sump pump controls level of water seepage. (Credit: GCCDS)

from individual buildings or sites up to an entire region. The diversity of scales may appeal to a larger set of stakeholders who may adopt these measures, including homeowners (site), homeowners' associations (neighborhood), municipal and county officials administering codes (jurisdiction), and environmental groups interested in the protection of watersheds and the coastal zone (regional).

Coastal Hazards Overlay District Strategies

The CHOD supports four broad-based approaches, or strategies that coastal communities may pursue to enhance their resilience. While communities can pursue these strategies in isolation, a hybrid approach that blends approaches is more likely, given existing investments, long-standing settlement patterns, and the series of public and private decisions made over time.

Limiting or Excluding Development in Hazardous Areas (Avoidance)

Avoidance strategies are exemplified by the application of land use planning, zoning, and other development regulations that limit or exclude development in identified hazardous areas. Communities may choose to limit development in areas prone to hazards today and in the future in anticipation of changes in the dynamic coastal zone.

Armoring the Coastline (Protection)

Protection-based strategies, often referred to as armoring the coastline, include measures like levees and seawalls. While a single measure can provide some protection, adopting multiple design standards and planning techniques (often referred to as "multiple lines of defense") that account for future hazard conditions and the natural dynamism of the coastal zone is often a more robust strategy.

Living With Flooding (Accommodation)

Adaptive engineering and design to accommodate the effects of extreme events can mitigate damage. The "wet floodproofing" of buildings provides an example of an accommodation strategy as this technique allows for the continued use of land that is subject to flooding while mitigating the effects of such hazards on associated structures. In this case, the building may be elevated or constructed of materials that can be submerged and at-risk electrical systems elevated above expected flood heights.

Moving Out of Harm's Way (Community-Led Relocation)

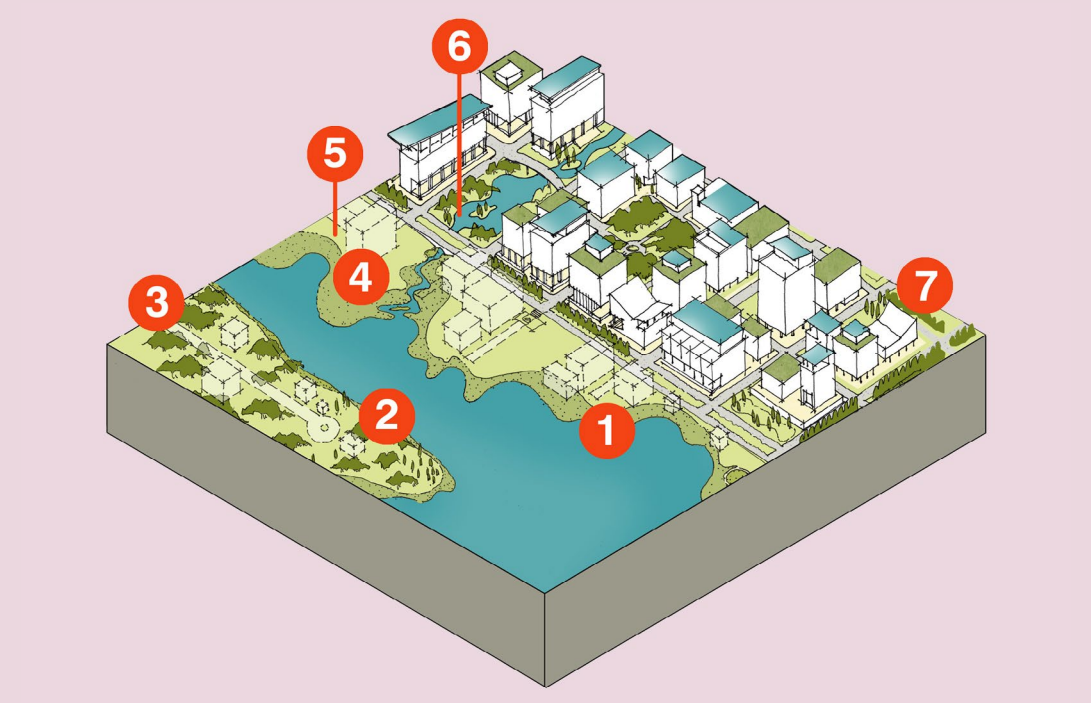
Community-led relocation may include the acquisition and demolition of hazard-prone properties and the conversion of the land to open space (often referred to as buyouts), as well as the physical relocation of at-risk housing, public facilities, and infrastructure. The CHOD guide intentionally uses "community-led relocation" as an alternative to "managed retreat" to emphasize the need for a planned approach driven by affected stakeholders.

Practical Planning Issues

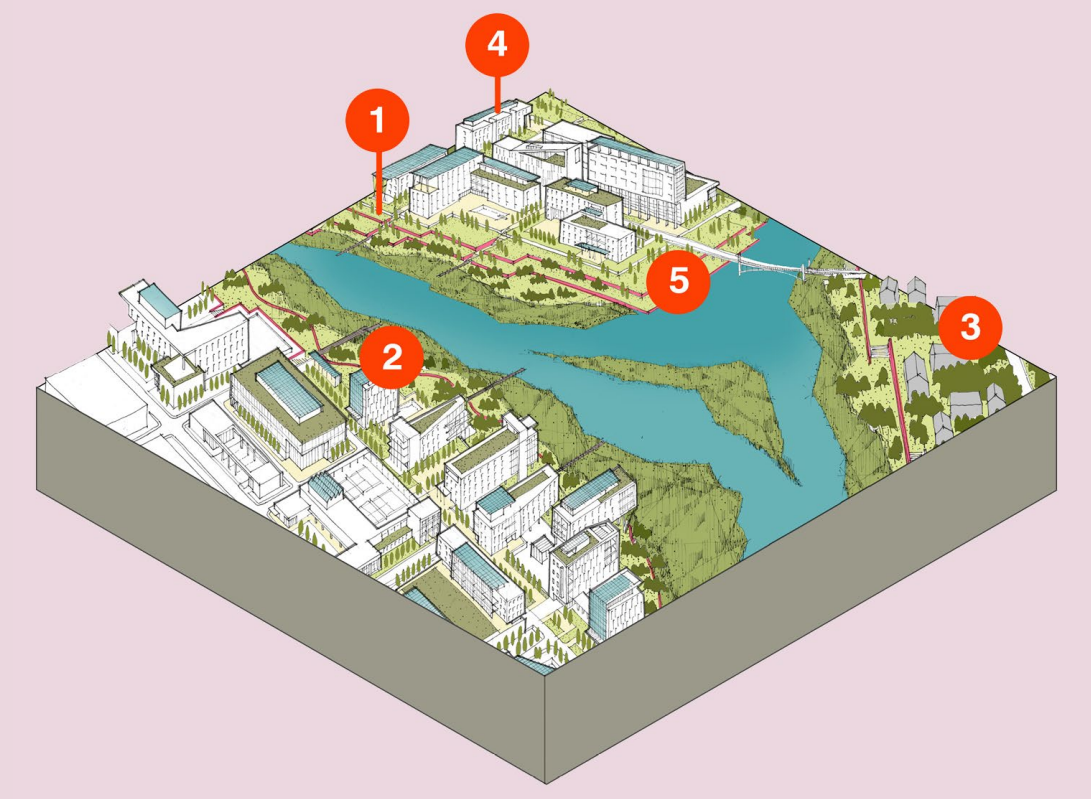
There are three practical planning issues that communities should consider as they analyze whether a CHOD could be the right tool for them.

Local Capacity for Creation and Management

An overlay district requires a certain level of capacity to create and manage. Does the community have sufficient technical expertise in-house, or would consultants be necessary to analyze the hazards present in the jurisdiction, map them, delineate the coastal hazard overlay district, and identify the most appropriate design standards and planning techniques? Could staff manage the additional workload associated with the modification of the development review process in the overlay district? Would the community be able to develop an accompanying zoning ordinance, which may prove challenging for smaller jurisdictions, including those without existing zoning regulations? To help jurisdictions explore ways



Potential design standards and planning techniques for sending areas. 1: Disassemble and relocate structures or salvage materials for reuse. 2: Create living shorelines. 3: Disinvestment, removal, and relocation of infrastructure. 4: Re-naturalize waterways. 5: Permanently conserve green space. 6: Increase stormwater capacity inland. 7: Establish green streets. (Credit: unabridged Architecture)



Potential design standards and planning techniques for receiving areas. 1: Transfer of development rights from sending areas may selectively increase density. 2: Increase stormwater capacity and conveyance. 3: Allow minimum lot widths to maintain ownership and prevent displacement. 4: Provide resilience hubs in neighborhoods to serve, educate, and shelter residents. 5: Elevate above base flood elevation to ensure extended service life.

to enhance their capacity to act, the CHOD guide includes an extensive list of stakeholders that may play a role in the creation, management, and long-term implementation and maintenance of a new CHOD.

Importance of Visualization of Policy and Design Options

Visual depictions of design standards and planning techniques spanning multiple scales enable planners to more effectively convey these ideas to broad audiences, including residents, developers, elected officials, and others. This is another area where communities may need to leverage the expertise of design professionals to develop compelling visuals and to verbally articulate how they can be used to achieve identified policy aims.

Alignment With Existing Zoning

The spatial orientation of an overlay district can be aligned with existing zoning and land use planning practices. While the practices and standards at the heart of a new CHOD can help communities enhance resilience in a defined area without having to negotiate variances on a case-by-case basis, it is important to consider how base zoning district standards and other generally applicable standards would interact with a new overlay district. Does the community have any prior experience integrating a new overlay into an existing zoning code, and are there lessons to be learned from that experience? Are there other communities (including those discussed in the guide's case studies) that have been through this process and are there lessons that could be learned from them?

Application in Use-Based and Form-Based Zoning Contexts

Communities can apply a CHOD whether their zoning regulations are primarily use-based (Euclidian) or form-based (new urbanist). Use-based zoning emphasizes

the separation of uses and limiting "incompatible" uses; whereas form-based zoning emphasizes physical aspects of buildings and their relationship to site-specific characteristics.

New urbanism's emphasis on compact urban form has the potential to reduce coastal hazard risk if development is in areas less susceptible to the impacts of coastal storms and sea level rise, while green spaces are strategically located to allow for rainwater infiltration. However, past research conducted by urban planning scholars has found that new urbanist developments are frequently located in high hazard areas, thereby exacerbating flood hazard risk (Stevens, Berke, and Song 2010). It is also worth noting that the presence of intensive development in the coastal zone is also found in jurisdictions that rely on the use of Euclidian zoning. A CHOD provides a way for communities to both proactively address natural hazards risk while recognizing that preexisting coastal settlements need access to tools that can be applied under multiple zoning conditions.

The use of an overlay district allows jurisdictions to identify spatially defined areas where new zoning classifications are not required. Instead, targeted design and planning techniques can be applied in designated areas as part of new construction and substantial improvements. A CHOD may apply requirements for structures to include roofing materials and roof type, foundation elevation, and use of water-resistant materials, as well as site and neighborhood-based requirements tied to ocean and riverine setbacks, low impact development, and use of pervious materials, for instance.

In addition, communities may apply a CHOD in less hazardous areas to incentivize development, like Norfolk, Virginia's Upland Resilience Overlay. The CHOD guide profiles this example and includes 14 other case studies illustrating how hazard mitigation and climate change adaptation design standards and planning techniques can be applied through use-based or form-based zoning.

Selecting Design Standards and Planning Techniques

There are a wide variety of design standards and planning techniques that communities may integrate into a CHOD (Table 1). Many of these standards and techniques are compatible with multiple strategies.

Table 1. Design Standards and Planning Techniques Associated With Each CHOD Strategy

Standards and Techniques	Protect	Accommodate	Avoid	Relocate
Abandoned Property Management			✓	✓
Backflow Preventers		✓		
Beach Nourishment	✓			
Berms and Swales	✓	✓		
Bioretention Cells	✓	✓		
Buyout of Hazard-Prone Properties				✓
Cluster Development			✓	✓
Community Shelter	✓			
Community-Led Relocation			✓	✓

Table 1. Design Standards and Planning Techniques Associated With Each CHOD Strategy

Standards and Techniques	Protect	Accommodate	Avoid	Relocate
Continuous Load Path	✓			
Corniche	✓			
Critical Facilities Relocation				✓
Decentralized Energy Generation	✓			
Dry Floodproofing	✓			
Elevated Access to Multiple Lots		✓		
Elevated Electrical & Mechanical Equipment		✓		
Elevated New Buildings		✓		
Elevated Roadways	✓	✓		
Elevating Existing Structures		✓		
Enhanced Site, Building, & Landscape Texture	✓	✓		
Flood Wall	✓			
Floodgates	✓			
Foundation Strengthening	✓			
Greenspace Conservation	✓		✓	
Hazardous Sites & Materials Relocation				✓
Hazard-Prone Property Stewardship			✓	✓
Home Sale: “Right of First Refusal”			✓	✓
Impervious Surface Area Reduction		✓		✓
Infrastructure Disinvestment				✓
Infrastructure Hardening	✓			
Levee	✓			
Living Shoreline	✓			
Lot Allowances		✓		
Low Impact Development		✓	✓	

Table 1. Design Standards and Planning Techniques Associated With Each CHOD Strategy

Standards and Techniques	Protect	Accommodate	Avoid	Relocate
Mixed-Use Zoning		✓		
Mobile and Portable Facilities			✓	✓
Near Shore Armoring	✓			
Oceanfront Setbacks	✓		✓	✓
Parking Space Minimization		✓	✓	
Protective Building Openings	✓			
Resilient Landscape Design	✓	✓	✓	
Riverine Buffers	✓		✓	✓
Seawalls	✓			
Sending and Receiving Areas	✓	✓	✓	✓
Solar Canopies	✓			
Stormwater Capacity		✓		
Temporary Flood Barriers	✓			
Transfer of Development Rights			✓	✓
Waterway Renaturalization	✓	✓		✓
Wet Floodproofing		✓		

Intensity of Development

The existing built form and intensity of development in a place often informs the strategies a community pursues when designing a CHOD. Furthermore, the feasibility of or approach to specific design standards and planning techniques can also depend on the form and intensity of place. Here are a few examples.

Impervious Surface Area Reduction

In low intensity areas, impervious surface area reduction is likely to occur by removing parking areas and converting impervious paving materials to pervious ones. In high intensity areas, buildings typically occupy most of their lots, and impervious surface area reduction is likely to occur through green roofs and green streets.

Elevated Roadways

In low intensity areas, the cost of elevating roadways is likely impractical, and strategies including elevating buildings, community-led relocation, and buyouts may be considered. In high intensity areas, elevated roadways may be necessary to facilitate evacuation and to allow access to urban areas as elevating, relocating, or acquiring and demolishing large buildings are often very costly.

Lot Allowances

Minimum lot sizes, maximum buildable area, and maximum impervious surface area are all representative of lot allowances controlled by zoning. In high intensity areas, it is not reasonable to require large lots and small development footprints. Instead, strategies like green roofs and compensatory storage may be more appropriate, as well as the use of flood storage and conveyance off site, including along streets and in adjacent public spaces like parks.

Scale of Development

Some design standards and planning techniques are most applicable at the neighborhood scale. In these cases, communities will need to consider the relationship of a new CHOD to their subdivision regulations. Other standards and techniques apply to both individual lots and new developments. Here are a few examples.

Cluster Development

This land use technique, which is most applicable at the neighborhood scale, groups new development in compact areas while preserving undisturbed parts of the site. Cluster development may be used to limit development in or near wetlands, water bodies, oceanfront areas, and floodplains, as well as to further stormwater management requirements, development limits, and other community goals. An increase in allowable development density may be offered to developers as a trade-off for natural area preservation.

Low Impact Development

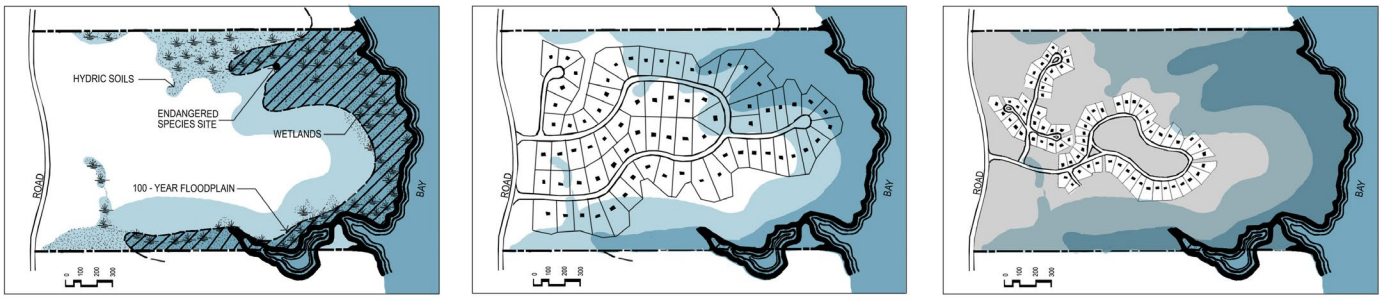
Low impact development (LID) requirements are typically found in an engineering manual that both zoning and subdivision applications are required to comply with. For both zoning and subdivision regulations, there are LID techniques that are more appropriate for high intensity areas and others more appropriate for low intensity areas. The LID standards should respond to intensity (also called context) as well as the characteristics of individual lots and subdivisions.

Riverine Buffers and Oceanfront Setbacks

Individual properties should be subject to riverine buffers and oceanfront setback regulations. However, individual properties do not offer significant hazard mitigation benefits, and large contiguous tracts are much more effective in reducing future losses and adapting to the inherent dynamism of riverfront and oceanfront areas.

Establishing and Managing a Coastal Hazards Overlay District

The process by which jurisdictions can successfully create and manage a CHOD is like many other substantive zoning reforms. The first step is to clearly define the intentions and purpose of the overlay district. Next, planners and local officials will need to align the overlay district with existing plans, policies, and programs. Then, they must delineate the boundaries of the district. The final step is to adopt,



A coastal hazard overlay district may encourage clustered development to minimize the exposure of buildable lots to hazardous conditions. (Left): A site analysis shows the presence of hazards; (Center): Conventional development overlaps hazard zones; (Right): Clustered development plans the same number of sites outside of hazard zones. (Credit: unabridged Architecture)

implement, monitor, and commit to updating the overlay district as necessary.

Define the Intentions and Purpose of the Overlay District

A new CHOD should be informed by a set of mutually supporting goals, like advancing resilience through a diverse set of design standards and planning techniques applied at multiple scales; applying higher design standards to future development and substantial improvements; and when practicable, guiding development away from high hazard areas and allowing for streamlined processes in low hazard areas.

Here are some important questions to answer when defining the intentions and purpose of a new CHOD:

A new CHOD should be informed by a set of mutually supporting goals.

- What are your jurisdiction's goals?
    - Fortifying and strengthening existing developments?
    - Creating higher standards for new construction?
    - Informing relocation efforts to include the identification of sending and receiving areas?
    - Informing elected officials, builders, prospective homeowners, and others about the varied techniques that can be adopted to reduce coastal hazards losses?
    - Limiting density or uses in high hazard areas?
    - Providing a vehicle to draw from a range of design standards and planning techniques to achieve the broader aims of creating resilient communities?
- What are your jurisdiction's resilience priorities?
- What type of economic development is expected or planned for your community?
- How does the threat of natural hazards affect your jurisdiction's economic development?
- How does the threat of natural hazards affect your jurisdiction's infrastructure?
- What are your jurisdiction's housing goals, and do they consider resilience?
- What parts of your jurisdiction are in high hazard areas, and should you consider reduced development in these areas?
- What parts of your jurisdiction, such as working waterfronts or downtown districts, have high economic importance and are characterized by high hazard risk?

Align with Existing Plans, Policies, and Programs

Once the purpose and intent of the overlay district are created, an evaluation of existing plans, policies, and programs should be conducted to ensure that they do not conflict with the overlay district and vice versa. This assessment may help jurisdictions to align complementary goals found in other plans such as the intent to densify less vulnerable areas, explore mixed-use development scenarios, and create affordable housing options.

Here are some important alignment questions when developing a new CHOD:

- How is resilience addressed in your current plans and ordinances, including the comprehensive plan, land development ordinance, hazard mitigation plan, economic development plan, capital improvement plan, zoning ordinance, and other relevant documents?
- Do any existing plans propose actions that may conflict with the aims of the CHOD?
- How are goals in existing plans used to inform the CHOD?
- Are there relevant neighborhood, regional, and state plans and ordinances that address resilience?
- What processes are in place to ensure that the network of plans in your community advance resilience?

Delineate the Boundaries of the District

Defining the spatial layout of the overlay district should consider the hazards present, the intent of the district, and current and projected human settlement patterns. Natural hazards mapping may rely on the jurisdiction's Special Flood Hazard Area, including both riverine and coastal flood hazards, and areas subject to coastal erosion and sea level rise. The flood hazard area may rely on Flood Insurance Rate Maps or hydric soils maps.

Additional spatially definable hazards to consider may include areas prone to subsidence, landslide or cliff collapse, and wildfire. Boundaries may explore both existing and future development, including areas where development is discouraged or encouraged (see for instance the Norfolk, Virginia, case study in the guide (which defines both a Coastal Resilience Overlay and Upland Resilience Overlay).

Here are some important questions to answer when establishing boundaries for a new CHOD:

- What would a high hazard, medium hazard, and low/no hazard delineation for your jurisdiction look like?
- Does your jurisdiction have differing types of coastal flooding (i.e., storm surge, urban, riverine, sea level rise, sunny day events) and other hazards (erosion, subsidence), and if so, how might this affect how your jurisdiction delineates hazard districts?
- How would you apply the varied strategies, design standards, and planning techniques in these districts?
- What other non-hazard-related factors (political support, proposed development, environmental impacts) might shape the delineation of hazard overlay districts?

Adopt, Implement, Monitor, and Update

For the overlay district to function properly it should be adopted by the jurisdiction's elected body. Developing a clear implementation strategy should be a priority, and this strategy should include identifying individuals or departments responsible for varied aspects of the overlay district and tracking the completion of specific projects. In addition, the ordinance should be monitored, and this monitoring should include assessing its effectiveness through the development of performance standards. The district should be updated as needed, based on agreed upon intervals (ideally aligned with other plan update schedules) and following disasters that may expose areas in need of improvement.

Here are some important adoption and implementation questions for a new CHOD:

- What resilient design standards and planning techniques will be implemented in the overlay district?
- Of the selected design standards and planning techniques, which are already being done? Which are within reach? Which will require significant work to implement?
- What is the legal process your jurisdiction plans to use to create and manage a hazard overlay district?
- What should be done to expand stakeholder input throughout the process?
- What decision-makers should be included in the delineation of your jurisdiction's hazard overlay districts?
- What, if any, opposition is anticipated?
- What is your plan for community engagement?
- What technical, fiscal, and administrative measures are required to develop and implement an overlay district?
- Does your jurisdiction have in place other overlay districts, such as a historic or economic development district? If so, what lessons might be drawn from them?

Defining the spatial layout of the overlay district should consider the hazards present, the intent of the district, and current and projected human settlement patterns.

Summary and Conclusions

In an era of climate change, planners are increasingly required to plan for uncertainty. The coastal hazards overlay district provides planners with a flexible and adaptive tool that recognizes the inherent dynamism of the coast and the need to evaluate, and ultimately adopt, multiple land use planning and design-based options at multiple scales. The ability to visually depict these options and assemble larger strategies tied to accommodate, protect, avoid, and retreat-based efforts along the oceanfront, sounds, and riverine environments empower planners to create more resilient coastal communities.

Acknowledgements: This issue is adapted from the *Coastal Hazards Overlay District Guide.*

References

Burby, Raymond J. 2006. "Hurricane Katrina and the Paradoxes of Government Disaster Policy: Bringing About Wise Governmental Decisions for Hazardous Areas." *The ANNALS of the American Academy of Political and Social Science* 604(1): 171–191.

Mississippi Renewal Forum (MRF). 2005. ***Summary Report: Recommendations for the Rebuilding of the Gulf Coast***. Gaithersburg, MD: The Town Paper.

Smith, Gavin, Allison Anderson, David Perkes, Ryan Anderson, Chitali Biswas, Cassie Nichols, Kelby Stallings, Georgia DeWitt, Derrick Duckworth, Brian Faulk, and Matt Lambert. 2025. ***Coastal Hazards Overlay District Guide***. Raleigh, NC: North Carolina State University.

Smith, Gavin, Allison Anderson, and David Perkes. 2021. "New Urbanism and the Hazard Transect Overlay District: Improving the Integration of Disaster Resilience and Design in Coastal Areas." *Landscape Journal* 40(1): 35–47.

Stevens, Mark R., Philip R. Berke, and Yan Song. 2010. "Creating Disaster Resilient Communities: Evaluating the Promise and Performance of New Urbanism." *Landscape and Urban Planning* 94: 105–115.

About the Author

Gavin Smith, PHD, FAICP, is a Professor of Landscape Architecture and Environmental Planning at North Carolina State University. His research, teaching, and community engagement focuses on hazard mitigation, disaster recovery and climate change adaptation.

Contributors

Allison Anderson, FAIA, is the founding principal of unabridged Architecture, recognized for leadership in resilience and climate adaptation. She is the author of *Climate Adaptation for Architects: A Design Toolkit*.

David Perkes, AIA, is a Professor of Architecture at Mississippi State University and Director of the Gulf Coast Community Design Studio. The Design Studio works with many nonprofit and professional partners on building, landscape, and planning projects that increase community resilience.

Ryan Anderson, ASLA, is a Landscape Planner and Designer at WRT in San Francisco. His work focuses primarily on coastal adaptation around the Bay Area, ranging from city-wide shoreline planning efforts to the implementation of resilient waterfront projects.

Chitali Biswas is a landscape designer at Elizabeth Kennedy Landscape Architecture. Her research and practice focus on disaster resilience and climate justice, with work centered on equitable and adaptive landscape strategies for vulnerable communities.

Georgia DeWitt, ASLA, is a landscape architect at the Gulf Coast Community Design Studio. Her work is focused on sustainable responses to stormwater through community informed design processes.

Cassie Nichols, PLA, ASLA, is a landscape architect whose work focuses on the design and implementation of green infrastructure, open space management through greenway and recreation planning, and the creation of resilient, community-centered spaces.

Matthew Lambert is a partner at DPZ CoDesign where he practices planning, zoning, and urban and architectural design, and is a board member of the Congress for the New Urbanism and PLACE Initiative. His work spans multiple disciplines, focusing on the environmental and physical context of buildings and places, and the regulations and policies that shape them.

American Planning Association

Creating Great Communities for All

ZONING PRACTICE JULY 2026 | VOL. 43, NO. 7. Zoning Practice (ISSN 1548–0135) is a monthly publication of the American Planning Association. Joel Albizo, FASAE, CAE, Chief Executive Officer; Petra Hurtado, PHD, Chief Foresight and Knowledge Officer; David Morley, AICP, Editor. Subscriptions are available for $65 (individuals) and $120 (organizations).