

# RESILIENT COASTAL DEVELOPMENT THROUGH LAND USE PLANNING:

Tools & Management Techniques  
in the Gulf of Mexico

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*This research was supported by the Gulf of Mexico Alliance Resilience Team with a grant from Mississippi Department of Marine Resources, through funding from the National Oceanic and Atmospheric Administration, under grant award NA08NOS473398.*



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## I. Introduction

*Resilience is the capacity of human and natural/physical systems to adapt to and recover from change. To continue to enjoy living and receiving the benefits these coastal areas have to offer, there is a need to make the natural, built, and social environments more resilient. Enhancing resilience requires adjustments to day-to-day living, as well as adjustments to processes of long-term settlement and development of coastal areas.*

— Gulf of Mexico Alliance Governors' Action Plan II 2009-2014 (p.26)

In creating the Governors' Action Plan II, Gulf Coast leaders recognized the importance of sustainable coastal development and its impact on the long-term health and resilience of our coastal communities. In response, the Coastal Community Resilience Priority Issue Team included the following action item in its work plan: research existing policies guiding coastal development and make recommendations to enhance resilience.

This report, combined with an earlier assessment of existing laws and policies, fulfills that action item.

Specifically, this report identifies ways to strengthen and enhance community resilience through land use planning, recognizing that there are no one-size-fits-all solutions. This report begins by providing an overview of land use planning and its key elements

– comprehensive planning, zoning, and building regulation. From there, land use management options for improving resilience are highlighted along with corresponding resources. Next, the report provides a discussion of incentives for improving the resilience of local land use planning. The report concludes with guidance for conducting an audit to initiate next steps.

The authors of this report recognize the growing body of work in this area by a wide array of organizations and practitioners. Where appropriate, references to additional resources have been included within the report. Additional materials can be found in the appendix.



## II. Land Use Planning Overview

Land use planning refers to the way we plan the physical layout, or land use, of our communities and is an essential component of a community's long-term resilience. It encompasses both the built and natural environment by shaping where development occurs and identifying areas for open space or preservation. The key components of land use planning include comprehensive planning, zoning regulations, and building codes.

### A. COMPREHENSIVE PLANNING

Comprehensive planning can be thought of as the "big picture" look at the community today and where the community envisions future development. Many coastal communities have existing comprehensive plans that are periodically reviewed or updated to accommodate changing needs. A strong comprehensive plan will consider social and environmental concerns the community wishes to address, along with geography and existing economic development in the area. Coastal municipalities should consider resilience to existing and future hazards when creating or updating comprehensive plans.

Comprehensive plans are the result of a public planning process that incorporates community involvement through public meetings. The specific requirements of comprehensive plans vary by state. However, plans will generally include the community's goals and objectives along with its principles and policies. These provisions provide a prime opportunity to incorporate coastal resilience into the comprehensive plan. By doing so, the community will provide heightened legal support for any later zoning or ordinance adoptions that further the

## Corpus Christi, Texas: Planning for Community Sustainability

Corpus Christi has used the comprehensive planning process to improve its resilience through the adoption of a Community Sustainability Plan. The plan centers around 12 broad categories that encompass a complete community. These range from essential services, like energy and water, to quality of life issues, such as knowledge and culture. The plan includes general recommendations for the broader community as well as place-based, more specific actions. Project leaders included community stakeholders at every step of the plan development to ensure that the end product was representative of the community's vision.

More detail of the Community Sustainability Plan is available here: <http://www.cctexas.com/government/planning-&-environment/index>

goals identified in the comprehensive plan. The development of the comprehensive plan will necessarily impact local zoning development because zoning must be consistent with the comprehensive plan.

Through comprehensive planning, communities may identify priority areas for resource protection or development. The plan may identify high hazard areas, such as floodplains for limited or low-impact development, while earmarking more stable geographic areas for future development. Essentially, comprehensive planning provides a mechanism for a local community to shape its future character by providing a roadmap for future growth.

In addition to a comprehensive plan, a city may also choose to adopt a disaster mitigation plan for dealing with post-disaster responses such as hurricane impacts. Communities may also adopt special purpose plans dealing with discrete areas like beachfront development. These planning efforts are generally considered supplemental to comprehensive plans undertaken as part of the on going comprehensive planning process.

When it comes to planning for community resilience, the first step is developing a comprehensive plan. But many communities in the Gulf of Mexico region have taken comprehensive planning a step further by adopting plans aimed specifically at improving the community's sustainability. For example, Islamorada, Village of Islands in the Florida Keys has adopted a sustainability plan that specifically references the community's concerns over global warming and goals of developing a greener community. The plan is available at: [http://www.islamorada.fl.us/Sustainability\\_Plan.asp](http://www.islamorada.fl.us/Sustainability_Plan.asp).

As discussed below, the Community Sustainability Plan adopted by

Corpus Christi, Texas highlights another approach to community resilience planning.

### B. ZONING

Zoning originated in New York City in 1916 and quickly spread throughout the United States. Local zoning authority, like comprehensive planning, is designated to communities by state governments and consequently varies by state. At its most basic level, zoning laws prescribe where, what, and how development occurs on the land. Traditional zoning divides a municipality into various zones and designates at least one as-of-right use – such as residential or retail. Other accessory uses may be allowed as provided in the ordinance. More recent approaches to zoning employ mixed uses within a zone, which allows for a more diverse landscape within a geographic area. The following provides an overview of different zoning techniques and examples of using those methods to promote resilience.

#### 1. OVERLAY DISTRICTS

The creation of an overlay district is accomplished by using a zoning technique called "Overlay Zoning." This technique is generally used by a community when it wants to either encourage or discourage development in a certain area. When an area has been subject to overlay zoning, the parcel within the zone will be subject to two sets of zoning regulations: the existing zoning (called underlying zoning) and the overlying zoning requirements. Overlay districts are often established in environmentally constrained areas in an





effort to protect from further damage, or to conserve a vulnerable natural resource area such as a wetland, watershed, or tidal basin. Other times the districts are established to protect the habitats of endangered plants and animals.

When overlay zoning is being used to accomplish the redevelopment of a deteriorated area, developers are typically given various incentives to develop in that area. On the other hand, when overlay zoning is being used in a conservation effort, restrictions within the overlay district will be implemented that deter developers from developing the area. All five Gulf states recognize the use of overlay districts as land use planning tools. Common examples of overlay districts include historic preservation districts. Communities in the Gulf have also used overlay districts to preserve waterfront access for traditional waterfront users through designations of “working waterfronts.” The City of Gulf Shores, Alabama and several Florida communities have used overlay districts in this manner to preserve working waterfronts within their communities. As can be seen below, overlay districts can be a useful tool to preserve groundwater resources as well.

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### **Protecting Groundwater through Overlay Districts**

One example of using overlay districts to promote resilience can be found in the EPA’s Groundwater Protection Overlay District Model Ordinance. The overlay district allows the local community to encourage development that minimizes contamination of aquifers and protects drinking water supplies across a range of current zoning districts.

Available at: <http://water.epa.gov/polwaste/nps/mol7.cfm>

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## **2. FLOATING ZONES**

Floating zones are designed to allow a community to permit certain uses that it seeks to promote and encourage. By adding floating zones to a community’s zoning districts, it allows for flexibility in accommodating new land uses, while maintaining control. Communities will often find that current zoning laws do not accommodate their changing needs. By utilizing floating zones, communities and developers are afforded flexibility in determining where to locate these needs based on several factors, including: impact on surroundings, access to utilities, effect on natural resources, preservation of open space, and potential for economic success.

Floating zones are initially added to the zoning ordinance as a zoning district. Without amending the zoning map, the zone is said to “float” until it is affixed to a parcel of land that can accommodate the uses.



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## Neighborhood Development Floating Zone

The Neighborhood Development Floating Zone is a model ordinance to help local governments foster green community development using the LEED-ND (Leadership in Energy and Environmental Design – Neighborhood Development) rating system. The floating zone is offered as a cost-effective and efficient tool that can be used by local governments hoping to incentivize the private sector to follow green neighborhood development principles when a more extensive zoning update process is not an option.

The Neighborhood Development Floating Zone and guidance material was developed by the U.S. Green Building Council and the Land Use Law Center at Pace Law School. Available at:

<http://new.usgbc.org/resources/neighborhood-development-floating-zone>

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Upon approval, the parcel is rezoned and becomes a new zoning district. Examples of uses include office complexes, affordable housing, multi-family housing, research laboratories, and commercial property.

A well crafted floating zone will conform with the comprehensive plan, not be undertaken to benefit a single landowner, and reasonably support the community’s objectives. By meeting these objectives, floating zones will avoid the risk of being invalidated as “spot zoning,” which is when the rezoning of a small parcel of land is done in an arbitrary and unreasonable manner, does not conform with the comprehensive plan, and often times is done just to benefit one landowner. Each of the Gulf states recognize floating zones so long as they are in accordance with the comprehensive plan of the community.

### 3. IMPACT FEES

When municipalities are faced with issues such as increasing costs or a decrease in federal and state funding, one of the methods used to close the gap is the implementation of impact fees. Impact fees are assessed to generate revenue to meet local infrastructure and public facility demands arising as the result of new development. Municipalities will assess impact fees upon the construction of new developments, which include apartments, single-family homes and commercial developments. Impact fees are typically paid at

the time the building permit or certificate of occupancy is issued, and are based generally upon the characteristics of the specific parcel (square footage, number of bedrooms, number of living units, a percentage of the project’s fair market value, etc.). By making the fees parcel specific, a closer correlation between impacts and assessments is provided. Impact fees can be used to fund a variety of services and facilities, and are not limited to infrastructure within the development.

While more than half the states allow the assessment of impact fees, they are often subject to various regulations. In cases where there is

a lack of specific state statutory authority, the focus will shift to whether the impact fee is a regulatory fee derived from the community’s land use authority and used specifically to regulate land use, or whether it constitutes an unauthorized tax that is being used to raise general revenues. With certain limitations, impact fees may be used in Alabama, Florida, Louisiana, and Texas. However, Mississippi does not currently allow the use of impact fees. An example of using impact fees to support local resilience can be seen in Texas, where impact fees may be used to fund stormwater management and flood control improvements associated with new development.





Photo credit: Colette Boehm

#### 4. TRANSFER OF DEVELOPMENT RIGHTS

Transfer of development rights (TDR) is a mechanism that gives landowners the ability to transfer the right to develop property under the current zoning provisions from their property to another property within the community. TDR is commonly used to preserve open spaces, farms and forests, or critical environmental areas. TDR programs are established by local governments and consist of three elements: (1) the sending district, (2) the receiving district, and (3) the TDR credits. The sending district is typically in an area being protected from development (like farmlands), while the receiving district is in an area that is able to absorb and support additional density, such as an industrial park or urban center.

The TDR credits can either be traded in a free market or facilitated through an established TDR bank. The credits will sometimes constitute an equal exchange, while other times higher development credits will be established for more environmentally valuable land. After a TDR credit is sold by a property owner in a sending district, a deed restriction prohibiting development on that property is recorded, and the property owner in the receiving district can apply the credit as a density bonus. TDRs have been used by local governments as a defense to takings claims made by citizens whose property rights have been in some way limited by government action. TDR programs are expressly recognized in the state laws of Florida, Louisiana, and Texas. Local governments in Mississippi have also adopted TDR programs. For a detailed look at TDR programs throughout the United States, visit: <http://smartpreservation.net/tdr-updates/>.

### Protecting Environmentally Sensitive Areas through TDRs

*Florida has a long history of using TDRs to protect environmentally sensitive areas at both the city and county level.*

#### Collier County, Florida's TDR Program

To preserve coastal areas and inland wetlands, Collier County, Florida, along Florida's southwest coast, implemented a Transfer of Development Rights (TDR) Program in 1974. They established a Special Treatment Overlay Zone across 80% of the county requiring stricter environmental standards for development permits. The overlay zone also created the TDR program stipulating that one dwelling unit per two acres within the zone could be transferred outside of the zone as long as the receiving parcel was at least two acres. When property owners sell development rights in the sending area, they either have to place a conservation easement on the property to ensure that the land will remain undeveloped or deed the land to the county for management. Minor development, such as a nature trail or boardwalk, is still permitted. To prevent unchecked growth outside of the overlay zone, the TDR Program placed a cap on the maximum density of the receiving parcel; the density could not exceed 20% of the zoned density.

[http://coastalmanagement.noaa.gov/initiatives/shoreline\\_ppr\\_tdr.html](http://coastalmanagement.noaa.gov/initiatives/shoreline_ppr_tdr.html)

#### City of St. Petersburg, Florida

For an example of TDRs at the city government level, the City of St. Petersburg, Florida has also adopted a community TDR program, available at:

[http://www.stpete.org/development/docs/16\\_70.pdf](http://www.stpete.org/development/docs/16_70.pdf)

## 5. EXACTIONS

Exactions refer to permit conditions that require a developer to set aside a portion of the development site or other land to mitigate impacts that the development will have on the community. Exactions are different from impact fees in that exactions are not asking for money but are requesting some type of “in-kind” set aside of the developer. The terms of the exaction must be proportional to the adverse impact that the project will have on the community. For example, exactions could be land set aside for parks or water drainage facilities if necessary for the landscape.

## 6. FORM-BASED CODES

Form-based codes are “a method of regulating development to achieve a specific urban form. Form-based codes create a predictable public realm primarily by controlling physical form, with a lesser focus on land use, through city or county regulations.” Form-based codes place more emphasis on the physical form of a community including building facades and the aesthetic impact on the public.

When it comes to resilient land use planning, communities may choose to adopt a type of form-based codes known as “smart codes.” Smart codes are designed to incorporate sustainability into land use. Pass Christian, Mississippi adopted a smart code in 2009. A copy of the Pass Christian Smart Code ordinance is available at: [http://www.ci.pass-christian.ms.us/planning\\_zoning.html](http://www.ci.pass-christian.ms.us/planning_zoning.html).

### C. BUILDING REGULATION

Another important aspect of community land use planning is building placement and design. Building design is regulated through the use of building codes. States may adopt statewide minimum thresholds allowing local communities to adopt more stringent requirements tailored to meet the needs and goals of the specific community. Building codes may address a variety of factors such as building elevation, energy efficiency, wind resistance, and fire hazards.

The International Building Code is a set of model building codes developed by the International Code Council and updated annually. The International Building Codes are used throughout the United States including the five Gulf states. State-specific building code thresholds are provided below.

#### 1. ALABAMA

The State of Alabama Building Commission sets statewide building codes. Alabama has adopted the 2009 International Codes as a statewide threshold for building codes, energy conservation code, fire code, fuel gas code, mechanical code, plumbing code, and residential code. Baldwin and Mobile County have both adopted these thresholds along with numerous Alabama coastal communities. For more detail, visit the Alabama Building Commission website at: <http://bc.alabama.gov/buildingcode.htm>.

#### 2. FLORIDA

The Florida Building Commission oversees building code standards in the state. The 2010 Florida Building Codes are based on the 2009 International Building Codes standards. This includes the building codes, energy conservation codes, existing building codes, fuel gas code, green construction code, mechanical code, plumbing code, property maintenance code, and residential code. Florida updates its building code requirements on a 3-year rotation. The next update is anticipated in 2014. For more information, visit the Florida Building Commission website at: <http://www.floridabuilding.org>.

##### *Green Building Standards*

In 2008, Florida passed the Florida Energy Conservation and Sustainable Buildings Act. The Act requires that all new construction of State buildings follow the guidelines of a green building rating system such as LEED, Green Globes, and the Florida Green Building Coalition. These requirements apply to all new county, municipal, school district, water management district, state university, community college, and state court buildings.

Recognizing the need for water conservation and water quality protection, the Act also promotes using “Florida-friendly landscaping” on publicly owned properties. “Florida-friendly landscaping” means quality



landscapes that conserve water, protect the environment, are adaptable to local conditions, and are drought tolerant.

### 3. LOUISIANA

The Louisiana State Uniform Construction Code Council sets statewide building code minimums. The Council has adopted the 2009 International Codes for its building code, energy conservation code, existing building code, fuel gas code, mechanical code, and residential code. More information can be found at: <http://lsuccc.dps.louisiana.gov/>.

### 4. MISSISSIPPI

At the state level, the Mississippi Building Code Council establishes minimum building code thresholds. In 2011, the MBCC adopted the 2006 International Codes for the building code, fire code, fuel gas code, mechanical code, plumbing code, and residential code. Any local government that updates or adopts new building codes must meet this minimum threshold. To date, many Mississippi coastal towns have adopted the 2006 IBC and Biloxi has adopted the 2008 standard for hurricane safety. Unlike other Gulf states, Mississippi has no state building energy code requirements for residential or commercial buildings. The Mississippi Building Code Council does not currently have a website.

### 5. TEXAS

Texas has adopted the 2006 International Codes as a statewide minimum threshold for building codes, residential code, fire code, mechanical code, plumbing code, and fuel gas code. Texas has adopted the 2009 International Energy Conservation Code (SECO). The State Energy Conservation Office sets the threshold for building energy codes. For more detail, visit their website at: <http://seco.cpa.state.tx.us/tbec/>.

In addition, the Texas Department of Insurance has additional information related to residential wind storm building code requirements. The Department of Insurance also oversees related inspections. More information related to wind storm building requirements for the building code and residential code can be found on the Department of Insurance's website at: <http://www.tdi.texas.gov/wind/>.

## III. Land Use Tools for Achieving Coastal Resilience

Gulf of Mexico coastal communities are rich and varied in their culture, heritage, and resources. They likewise present unique landscapes, both geographically and politically, for land use planning approaches. This section of the report identifies land use planning tools that may be used by Gulf Coast communities to enhance or strengthen coastal resilience, while recognizing that land use planning is not a one-size fits all endeavor. The following section highlights different approaches to achieving resilient coastal development.

### A. SMART GROWTH

Smart growth can be considered a thematic approach to land use development. The American Planning Association defines smart growth as using comprehensive planning to guide, design, develop, revitalize, and build communities for all that:

- Have a unique sense of community and place;
- Preserve and enhance valuable natural and cultural resources;
- Equitably distribute the costs and benefits of development;
- Expand the range of transportation, employment, and housing choices in a fiscally responsible manner;
- Value long-range, regional considerations of



sustainability over short term incremental geographically isolated actions; and

- Promote public health and healthy communities.

Smart growth simultaneously focuses on numerous elements of a community including economic development, energy conservation, transportation considerations, and the natural environment. Smart growth encompasses a broad array of land use techniques to accomplish these overarching themes.

There are many resources for smart growth. Coastal specific resources include:

- *Achieving Hazard-Resilient Coastal & Waterfront Smart Growth*, a joint report by NOAA and EPA (2011), <http://coastalsmartgrowth.noaa.gov/resilience.html>.
- *Smart Growth for Coastal and Waterfront Communities*, a report by NOAA, EPA, and others. (2009), <http://coastalsmartgrowth.noaa.gov/report.html>.

For a comprehensive approach to smart growth policies, Smart Growth America has a variety of policy resources available. Topics include agriculture, economic development, education, energy, health, housing, natural resources and environment, planning and transportation. <http://www.smartgrowthamerica.org/policy-guide>.

## B. LAND USE TECHNIQUES

The following section highlights different approaches to achieving resilient coastal development.

### • BUFFERS AND SETBACKS

Vegetative Buffers (also referred to as Setbacks) can be used along waterways, wetlands, and any other sensitive areas to provide a natural boundary between the protected area and development. These buffers provide numerous benefits including flood control, water quality enhancement, bank stabilization, and habitat preservation. An effective buffer ordinance will specify a minimum distance or width of the buffer based on local conditions and needs.

There are a variety of resources online for adopting specific “need-based” setbacks like wetland setback model ordinance guidance available from the Association of State Wetlands Managers at: <http://aswm.org/>. In addition, the EPA Model Ordinance for buffers can be found at: <http://water.epa.gov/polwaste/nps/buffers.cfm>.

### • BUILDING CODES

Adopting and periodically updating building codes improves the resilience of a community’s built environment. Local communities may adopt the state minimum standards when they update their building codes or go beyond the code’s minimums to address local concerns, such as freeboard standards that meet

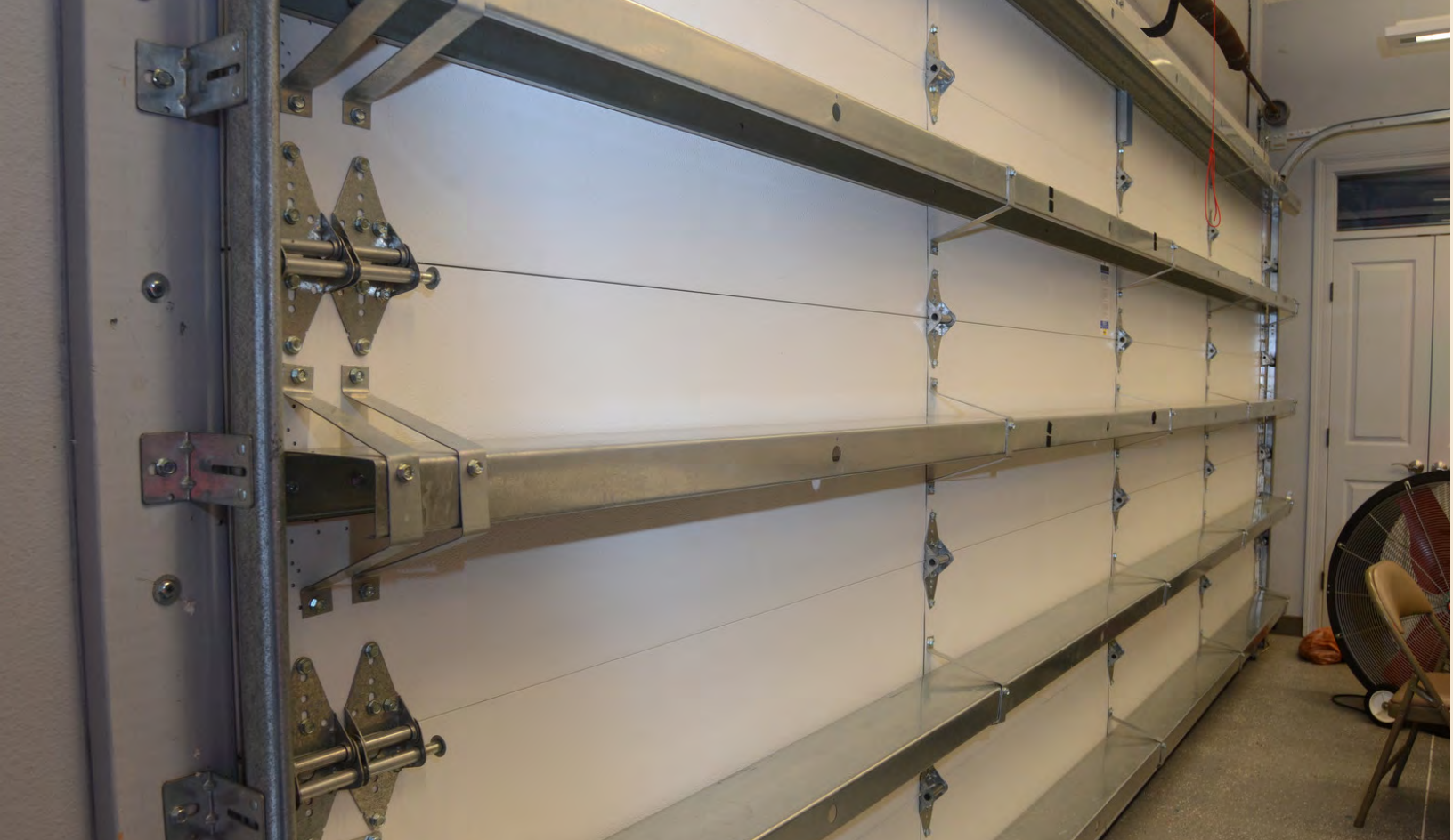
National Flood Insurance Program requirements, energy codes that improve the energy efficiency of buildings, and wind resistance requirements to improve building resiliency to hurricanes. State minimum thresholds for building codes are discussed above in Chapter 2: Building Regulation.

The Sustainable Cities Institute has developed guidance for developing a sustainable building ordinance, including construction and operations, site selection, and materials components. These resources are available at: <http://www.sustainablecitiesinstitute.org/view/page.infotype/legislation>

The U.S. Department of Energy has a variety of resources available for developing green building codes. Focus areas include a broad range of topics such as energy conservation, lighting policies, green building policies, and water conservation and landscaping policies. <http://www.energycodes.gov/resource-center/model-policies>.







- **CONSERVATION EASEMENTS**

Conservation easements allow local governments (or designated land trusts) to acquire easements on land of environmental value as a means to protect property containing natural resources. The Uniform Conservation Easement Act defines a conservation easement as: a nonpossessory interest of a holder in real property imposing limitations or affirmative obligations the purposes of which include retaining or protecting natural, scenic, or open-space values of real property, assuring its availability for agricultural, forest, recreational, or open-space use, protecting natural resources, and maintaining or enhancing air or water quality. This is often accomplished by purchasing development rights from a landowner, which will then attach a deed restriction prohibiting any further development that would alter the environment. Drafting guidance is available from The Land Trust for the Mississippi Coastal Plain: [www.ltmcp.org/protect-your-land/](http://www.ltmcp.org/protect-your-land/).

- **CONSERVATION SUBDIVISIONS AND CLUSTER DEVELOPMENTS**

Conservation subdivisions permit flexibility of building design in order to promote environmentally sensitive and efficient use of the land. The practice typically focuses on the preservation of sensitive natural resources such as groundwater, floodplains, wildlife habitats, and wetlands. Other examples include clustering houses and structures on less environmentally sensitive soils, which reduces the amount of infrastructure in the area and reduces erosion and sedimentation by minimizing the disturbance and removal of vegetation. Cluster developments also allow for greater open space.

EPA Model Ordinances for open-space developments: <http://water.epa.gov/polwaste/nps/openspace.cfm>

The American Planning Association's Model Residential Cluster Development Ordinance: [http://www.lebcounty.org/Planning/Documents/Comp%20Plan%20-%20Appendix%20III/LCCP\\_AppIII\\_07\\_ResidentialClusterDevelopment.pdf](http://www.lebcounty.org/Planning/Documents/Comp%20Plan%20-%20Appendix%20III/LCCP_AppIII_07_ResidentialClusterDevelopment.pdf)

- **FLOODPLAIN MANAGEMENT**

Most communities, as part of their participation in the National Flood Insurance Program, have adopted floodplain management regulations designed to ensure that new buildings and substantially improved





existing buildings in flood-prone areas are protected from typical flood damage in the area. The specific requirements vary depending on the type of flood hazards present in a community.

The Gulf states have resources available to assist local communities in adopting and enhancing their floodplain management ordinances. State-specific guidance on floodplain ordinances is listed below.

#### **ALABAMA**

- The Alabama Department of Economic and Community Affairs Floodplain Management Unit has developed model ordinances for use in Alabama. These include a model flood ordinance for island communities and a model flood damage prevention ordinance for coastal communities. Available at: <http://www.adeca.alabama.gov/Divisions/owr/floodplain/Pages/default.aspx>

#### **FLORIDA**

- Florida floodplain management is coordinated by the State Floodplain Management Program. The program provides a variety of tools, including local ordinance and building code resources. Available at: <http://www.floridadisaster.org/Mitigation/SFMP/Index.htm>

#### **LOUISIANA**

- The Department of Transportation and Development is the state coordinating agency for the National Flood Insurance Program. <http://www8.dotd.la.gov/lafloods/>

#### **MISSISSIPPI**

- The Mississippi Emergency Management Agency is the designated state agency for National Flood Insurance Program and coordinates floodplain management in the state. Resources include model ordinance guidance for flood damage prevention. <http://www.msema.org/floodplain-management/ordinances/>

#### **TEXAS**

- The Texas Water Development Board oversees the National Flood Insurance Program and other floodplain management projects in Texas. <http://www.twdb.state.tx.us/flood/index.asp>



The Association of State Floodplain Managers provides additional resources including a Coastal Floodplain Model Ordinance created by Hawaii Sea Grant and its partners.

Available at: [http://www.floods.org/ace-files/documentlibrary/State\\_Local%20Resources%20and%20Tools/Best%20Practices/Sea\\_Grant\\_Coastal\\_Floodplain\\_Bylaw\\_Model\\_12\\_14\\_09.pdf](http://www.floods.org/ace-files/documentlibrary/State_Local%20Resources%20and%20Tools/Best%20Practices/Sea_Grant_Coastal_Floodplain_Bylaw_Model_12_14_09.pdf)

- **LIVING SHORELINES AND ALTERNATIVE SHORELINE STABILIZATION**

Living shorelines generally refer to the use of native plants or other alternative means to shoreline stabilization such as oyster reef restoration. Where water conditions are appropriate, living shorelines provide a resilient alternative to hard structures such as bulkheads and riprap. Minimum requirements for shoreline stabilization activities are set at the state and federal level but local governments may enhance or promote the use of alternatives through local ordinances.

For example, Brevard County, Florida defines living shorelines as “erosion management techniques, such as the strategic placement of plants, stone, sand, and other structural and organic materials, that are used primarily in areas with low to moderate wave energy, and are designed to mimic natural coastal processes.” The county ordinance goes on to identify living shorelines as the preferred shoreline stabilization technique in areas where bulkheads and reinforced rock revetments are prohibited.



- **LOW-IMPACT DEVELOPMENT & STORMWATER**

Low-Impact Development is a design approach to managing stormwater by using natural features. LID emphasizes conservation and use of on-site natural resources to control stormwater and improve water quality. LID aims to preserve and recreate natural landscape features, minimize impervious surfaces, and design functional and appealing site drainage that treats stormwater as a resource rather than a waste product. Examples of LID practices include use of bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements.

The City of Auburn, Alabama has incorporated LID into its local land use regulations through a Conservation Subdivision Ordinance that incorporates many resilient land use techniques discussed in this document. The ordinance can be found at: <http://www.auburnalabama.org/pl/Default.aspx?PageID=709>.



For additional guidance, see The Centers for Excellence in Watershed Management’s Southeastern United States Low Impact Development Guide, <http://www.rivercenter.uga.edu/publications.htm>. An Alabama specific Low Impact Development Guide is available at: <http://www.aces.edu/waterquality/LID/resources.php>.

In addition, EPA has extensive LID resources available at: <http://water.epa.gov/polwaste/green/index.cfm>.





- **SEDIMENT AND EROSION CONTROL**

Sediment and erosion runoff end up in local waterways and have the potential to decrease water quality. Establishing sediment and erosion control regulations through local ordinances allows communities to reduce these impacts. While state and federal laws may institute a minimum standard, local communities may wish to enhance or tailor requirements to address localized impacts. For instance, communities can require developers to submit site maps and narratives that describe the potential impacts related to erosion and sedimentation before approving a new project. In addition, local communities may choose to institute measures that limit sediment run off into streams and waterways, thereby improving water quality.

Alabama has developed an Erosion and Sediment Control Handbook that addresses general planning concepts and best management practices with applicability across the Gulf. It is available at: <http://www.aces.edu/waterquality/LID/resources.php>. Likewise, EPA has model ordinance guidance available at: <http://water.epa.gov/polwaste/nps/erosion.cfm>.

- **STORMWATER**

In addition to Low-Impact Development (discussed above), there are a variety of other mechanisms for addressing water quantity and quality through stormwater management. These issues may also cross-cut with sediment and erosion control measures because stormwater management is concerned with both water quality and water quantity.

For a broad variety of model ordinances, Florida Coastal Strategies provides a clearinghouse of model ordinances addressing water quality and water quantity. EPA has developed model ordinance language focused on stormwater runoff, available at: <http://water.epa.gov/polwaste/nps/mol6.cfm>.

In addition to the examples in this section, additional resources can be found in Appendix I.



## IV. Benefits of a Resilient Land Use Policy

Communities choose to enhance the resilience of their land use policies for a variety of reasons. These reasons can range from the need to incorporate new uses into local planning to aesthetics, public access, or improved storm readiness. Regardless of the motivation, the end result is a stronger, more resilient community.

In addition to a more resilient community, coastal communities may also reap the benefit of very tangible outcomes like a higher Community Rating System score for flood insurance or a third party certification that allows the city to easily promote its accomplishments. Examples are discussed below.

- **NATIONAL FLOOD INSURANCE PROGRAM & THE COMMUNITY RATING SYSTEM**

Though participation is voluntary, most coastal communities choose to participate in the National Flood Insurance Program. Participation allows community residents to purchase federally subsidized flood insurance. To participate, communities must adopt floodplain management regulations designed to ensure that new buildings and substantially improved existing buildings in flood-prone areas are protected from floodplain management. The specific requirements vary depending on the type of flood hazards present in a community.

Communities that choose to exceed the minimum NFIP requirements can qualify for a preferred score on the Community Rating System (CRS) and a corresponding discount for flood insurance premiums in the community.

- **THIRD PARTY CERTIFICATIONS**

Third party certifications may provide communities with another avenue to showcase their resilient accomplishments. Participation in these programs allows the community to highlight its resilience to the broader public. Example programs include the Resilient Clean Marina Program, LEED for Neighborhood Development, and Green Shores for Homes.

## V. Assessing Needs

Once a community identifies its resource protection priorities, the community should conduct an audit or needs assessment to guide development of new policies. This allows the community to evaluate existing programs, identify objectives of its new program, and develop recommendations for meeting those objectives.

### *CONDUCTING AN AUDIT:*

- **DOCUMENT EXISTING POLICY**

The audit should begin by examining how the community is currently managing the resource. This may include a review of existing ordinances, funding sources, monitoring programs, and any applicable technical reports.

- **IDENTIFY OBJECTIVES OF NEW PROGRAM**

The review in step one should provide the community with the background needed to develop short- and long-term goals to achieve its new land use planning objectives.

- **IDENTIFY LEGISLATIVE AND REGULATORY ISSUES**

Communities should monitor recent state and federal legislation and regulations to ensure that the comprehensive plan objectives address potential concerns and opportunities. This may include legislation related to disaster relief, emergency management, sea level rise, building code requirements, the National Flood Insurance Program, and other issues.

- **EVALUATE POTENTIAL LEGAL CHALLENGES AND ROADBLOCKS**

Are there existing zoning ordinances that limit or prohibit the community's new objectives? Communities should flag any conflicting or confusing ordinances in its existing zoning policies and develop solutions.

Potential legal challenges should also be considered. Local governments are generally immune from liability for governmental activities. However, changes in the law over the last few decades may have eroded this immunity. Communities should conduct an analysis of state law regarding local government immunity.

Local governments have long exercised the power to regulate land use. Though these powers vary by state, this generally includes the power to tax private property, take property under eminent domain (with compensation), and establish rules for the public benefit through use of the police power. However, new land use policies may be challenged by private property owners alleging that the government has taken or infringed upon their property rights. Local governments should evaluate the likelihood of these claims and support new land use policies with relevant studies demonstrating the need and benefit to the public good. For more information on takings law, visit <http://legal.stormsmart.org/>.

- **RECOMMENDATIONS**

In preparing the audit, coastal communities should identify recommendations for how they will meet their objectives. These recommendations will be specific to each community and depend on existing programs and objectives. They may include: federal, state, and local funding issues and opportunities, permitting and implementing a local project, regional management agreements, methods to avoid or minimize liability, mitigation of coastal impacts caused by third parties, avoiding regulatory delays and impediments, public relations, and others.

## VI. Conclusion

Like land use planning, community resilience begins at the local level. How does the community envision itself in 20, 40, 50 years? Who lives here in the future? What type of businesses does the community want to attract? What are the existing identified challenges? What might be future challenges? The answers to all these questions and more help local communities develop a comprehensive approach for the future, and in doing so, improve the resilience of the community as a whole.

Land use planning is one way that local communities can achieve greater resilience. The tools included in this report represent broad categories of land use issues that local communities may encounter and provide resources for developing resilient land use policies in a variety of areas. As acknowledged by the Gulf of Mexico Alliance's Governors' Action Plan II, sustainable coastal development is an essential component of strengthening and enhancing the long-term health of our coastal communities.



## APPENDIX I

### GENERAL PLANNING RESOURCES

*Adapting to Climate Change: A Planning Guide for State Coastal Managers*, (2010) NOAA

Provides guidance on developing an adaptation plan with particular focus on shoreline management, coastal and marine ecosystem management, and water resource management and protection. Available at: <http://coastalmanagement.noaa.gov/climate/adaptation.html>

*Adapting to Coastal Climate Change: A Guidebook for Development Planners*, (2009) USAID

Provides a detailed treatment of climate concerns in coastal areas with a global focus. Available at: [http://transition.usaid.gov/our\\_work/cross-cutting\\_programs/water/news\\_announcements/coastal\\_climate\\_change\\_report.html](http://transition.usaid.gov/our_work/cross-cutting_programs/water/news_announcements/coastal_climate_change_report.html)

*Achieving Hazard-Resilient Coastal & Waterfront Smart Growth*, (2011) NOAA & EPA

Explores how coastal and waterfront communities can create environmentally and economically sustainable neighborhoods while minimizing risks from coastal flooding. Available at: <http://coastalsmartgrowth.noaa.gov/resilience.html>

*Best Practices Manual for Development in Coastal Louisiana*, (2012) CPEX

The Center for Planning Excellence has recently developed a Louisiana specific local planning guide for development in coastal areas. The Manual and associated website include guidance on ordinance development and local examples. Available at: <http://coastal.cplex.org/>.

*Climate Adaptation Clearinghouse*, Georgetown Climate Center

The online clearinghouse provides a range of resources including information on sea level rise and coastal areas. <http://www.georgetownclimate.org/adaptation/clearinghouse>

*Coastal Community Planning and Development*, NOAA

Training program that teaches participants about planning processes, current coastal development patterns and trends, and alternatives to conventional patterns of growth and development. More information at: <http://www.csc.noaa.gov/digitalcoast/training/planning-development>

*Hazard Mitigation: Integrating Best Practices into Planning*, (2010) FEMA & APA

Includes information on the Disaster Mitigation Act

and was recommendations for incorporating hazard mitigation into local land use planning; includes case studies. Available at: <http://www.fema.gov/library/viewRecord.do?id=4267>

*Louisiana Coastal Hazard Mitigation Guidebook* (2008) Louisiana Sea Grant

The Guidebook provides detailed information for addressing coastal hazards. Available at: <http://www.lsu.edu/sglegal/projects/completed.htm>

*Protecting the Public Interest through the National Coastal Zone Management Program: How Coastal States and Territories Use No-Build Areas along Ocean and Great Lake Shorefronts*, (2012) NOAA

Looks specifically at where states and territories employ no-build areas (e.g., through setbacks, rolling easements, or zoning) along ocean and Great Lake shorefronts, typically on dry, privately owned land, to protect the public interest. Available at: [http://coastalmanagement.noaa.gov/issues/hazards\\_activities.html](http://coastalmanagement.noaa.gov/issues/hazards_activities.html)

*Smart Codes: Model Land-Development Regulations*, (2009) APA

Guide to development of model smart growth ordinances. Available from: <https://www.planning.org/resources/>

*Smart Growth for Coastal and Waterfront Communities*, (2009) NOAA, EPA, and partners

Developed in consultation with the national Smart Growth Network, the interagency guide builds on the network's ten smart growth principles to create coastal and waterfront-specific strategies for development. Available at: <http://coastalsmartgrowth.noaa.gov/report.html>

*Smart Growth Principles*, EPA

Online resource by EPA that provides information about smart growth principles and links to additional resources. Available at: [http://www.epa.gov/smartgrowth/about\\_sg.htm](http://www.epa.gov/smartgrowth/about_sg.htm)

*State Coastal Development Laws in the Gulf of Mexico*, (2011) Mississippi-Alabama Sea Grant

Overview of land use planning laws in the Gulf states with emphasis on coastal development. Available at: <http://masglp.olemiss.edu/advisory.htm>

## APPENDIX I (Continued)

### OTHER RESOURCES (organized alphabetically by category)

#### BUILDING CODES

##### *Institute for Business and Home Safety*

Online resource that includes information on fortified homes. <http://www.disastersafety.org/>

##### *International Code Council*

Range of information on various building code standards including the most recent codes and information on state-specific code adoptions. [www.iccsafe.org](http://www.iccsafe.org)

##### *Texas Water Development Board*

The Texas Water Development Board provides a number of resources including a Builders checklist for the Texas Coast and Shoreline. Available at: <http://www.twdb.state.tx.us/flood/resources/index.asp>

#### FLOODPLAINS

##### *No-Adverse Impact Guidance for Floodplain Management, Association of State Floodplain Managers*

Numerous resources are available from the Association of State Floodplain Managers providing guidance on land use impacts in floodplains. Available at: <http://www.floods.org/index.asp>

#### WATERFRONTS

##### *Clean & Resilient Marina Guidebook (2013),*

Provides guidance for the promotion and expansion of resilient and environmentally responsible operations and best management practices at marinas.

##### *National Working Waterfront Network*

Numerous resources related to preserving working waterfront areas. Available at: <http://www.wateraccessus.com/>

#### WILDFIRE

##### *Addressing Community Wildfire Risk: A Review and Assessment of Regulatory and Planning Tools (2011), The Fire Protection Research Foundation*

Assesses regulatory planning tools for addressing community wildfire risk. Available through: [www.nfpa.org/Foundation](http://www.nfpa.org/Foundation)