



# Regulatory Best Practices to Make Louisiana Coastal Communities More Resistant to Natural Hazards



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# Regulatory Best Practices to Make Louisiana Coastal Communities More Resistant to Natural Hazards

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## Introduction

The Louisiana coastal region is regularly affected by flooding, coastal storm surge, shoreline erosion, and sea level rise and land subsidence. The increasing number and intensity of coastal storms and other natural hazards are putting more people and property at risk along Louisiana's coast. These risks are creating grave implications for human safety and economic and environmental health in the coastal areas. The Department of Natural Resources is placing priority on addressing coastal resiliency and mitigating natural hazards. The purpose of this white paper is to focus on ways to make Louisiana coastal communities more resilient to coastal hazards from increasing probabilities of coastal storms and increasing sea level rise. Some of the methodologies for improving resiliency include: improved best management policies, practices and principles and/or changes to Local Coastal Management Programs (LCMP) policies or other regulatory changes identified through the survey and gap analysis. The white paper identifies potential solutions that the state coastal management program can undertake primarily through its oversight of the parish LCMP regulatory requirements and outreach efforts. As a component of this project, St. Tammany Parish will enact a LCMP change that increases resiliency in the parish.

## Hazards Overview

The Louisiana Sea Grant Law & Policy program conducted a review of existing parish regulations to determine where gaps in hazard mitigation exist. Most of the coastal parishes have similar gaps in hazard preparation because they have adopted nearly identical local ordinances based on Federal Emergency Management Agency's (FEMA) model flood ordinance. All of the parishes have a set of regulations and/or ordinances that contains a "finding of fact" section. The "finding of fact" section tends to lay out the hazards that are currently a threat to their coastal parish. None of the parishes address the issues of sea level rise, subsidence, or climate change as threats to coastal Louisiana. Instead, the "finding of fact" section discusses flood hazards that result in loss of life, property, health and disruption of commerce and governmental services.<sup>1</sup> According to the "finding of fact" section, these flood losses "are created by a cumulative effect of

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<sup>1</sup> See, for example, Vermilion Parish Ordinance Sec. 14-17, Terrebonne Parish Ordinance Sec. 9-4.

obstructions in floodplains which cause an increase in flood heights and velocities, and by the occupancy of flood hazard areas by uses vulnerable to floods and hazardous to other lands because they are inadequately elevated, flood proofed, or otherwise protected from flood damage.”<sup>2</sup> The “finding of fact” section only addresses riverine flooding, and fails to address flooding that has been caused as a result of storm surge. Additionally, the “finding of fact” section does not mention the issue of storm water retention, nor how important it is to manage storm water after a flood event.

While the “finding of fact” sections are accurate for the topics they list, there are larger problems causing increased flooding that must be addressed, including sea-level rise, subsidence, extreme storms, land loss and erosion. The Gulf Coast has experienced a wide range of storms since 2000, from major storms, such as the 2005 Hurricanes Katrina and Rita and the 2008 Hurricanes Gustav and Ike, to lower-category storms, like Hurricane Isaac in 2012. Both major and minor storms alike can cost homeowners, industry, and communities billions of dollars in damages and result in personal injuries or lost lives.<sup>3</sup>

A coastal storm system can bring with it many types of hazards, and one of the most dangerous is storm surge. Storm surge is the build-up of water due to winds and pressure in the area around a storm.<sup>4</sup> The category or wind speed of a storm is not a true indication of the storm surge that may be associated with it; many characteristics of a storm, including forward speed and direction of movement, will create a storm surge that is completely unique to the particular storm.<sup>5</sup> Additionally, the topography of the area of landfall will impact how far inland the storm surge travels. For example, natural features such as coastal wetlands, Cheniers, and coastal forests can reduce the impact of storm surge. Unfortunately, many coastal areas have lost their natural buffers and are more prone to damage from surge.<sup>6</sup> On top of storm surge, coastal storms can cause severe wind damage to both the built and natural environment and can spawn tornadoes that result in even more severe damage.

Another coastal hazard is land loss, which according to Louisiana’s 2012 Comprehensive Master Plan for a Sustainable Coast, “Land loss in Louisiana is caused by many different factors, both natural and manmade. Levees and floodgates on the Mississippi River have successfully provided national flood control and economic benefits. But these forms of river management have also channeled the Mississippi River and its tributaries into the Gulf of Mexico, depriving the coastal ecosystem of the fresh

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<sup>2</sup> *Id.*

<sup>3</sup> CENTER FOR PLANNING EXCELLENCE (CPEX) AND COASTAL PROTECTION AND RESTORATION AUTH. OF LA. (CPRA), BEST PRACTICES MANUAL FOR DEVELOPMENT IN COASTAL LOUISIANA (2012) *available at* <http://coastal.cplex.org>

<sup>4</sup> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA) AND NATIONAL HURRICANE CENTER (NHC), INTRODUCTION TO STORM SURGE (2013), *available at* [http://www.nhc.noaa.gov/surge/surge\\_intro.pdf](http://www.nhc.noaa.gov/surge/surge_intro.pdf)

<sup>5</sup> *Id.*

<sup>6</sup> Barbier, EB, Georgiou, IY, Enchelmeyer, B, & Reed, DJ, *The Value of Wetlands in Protecting Southeast Louisiana from Hurricane Storm Surges* (2013), *available at* PLoS ONE, <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058715>

water and sediment it needs to survive. Dredging canals for oil and gas exploration and pipelines provided our nation with critical energy supplies, but these activities also took a toll on the landscape, weakening marshes and allowing salt water to spread higher into coastal basins. Sea level rise, subsidence, storms, and invasive species add further stress.” Every year, as a result of erosion, subsidence, and sea level rise, more and more coastal wetland areas turn into open water. While there are plans for large diversions and sediment pumping to help reduce the speed of erosion, sea level rise will make this process more difficult. The International Panel on Climate Change (IPCC) released a report in 2007 that indicates that sea level rise rates are likely to increase during the 21<sup>st</sup> century.<sup>7</sup> According to the IPCC report, global sea level rise in the 21st century is “*very likely*” to outpace the rate seen during the past 100 years. Estimates for this century predict sea level to rise 7-15 inches, in the best-case scenario, and 10-23 inches, in the worst-case scenario.<sup>8</sup> In some areas, the wetlands have the ability to migrate inland. However, in other areas, man-made structures such as levees and bulkheads prevent this migration.<sup>9</sup> In areas where wetlands cannot migrate, the coastal communities behind these areas suffer from a loss of natural protection, as wetlands can reduce storm surge and wind speed from an incoming storm. Additionally, the loss of wetlands can lead to a degraded fishery, which many residents of coastal communities depend upon for food and income.

Coastal Louisiana parishes seem to generally underestimate the number and severity of hazards they face in attempting to maintain their viability and resiliency into the future. While that tendency is understandable given the nature of human psychology, the esoteric nature of some of the science used to calculate hazard threats, and economic realities that local governments face; failure to address these very real hazards is short-sighted. By denying the vulnerability of the Louisiana coast, the likelihood that communities can strategically defend themselves from natural hazards is greatly reduced. It would be more prudent for local governments to recognize the risks which their communities face and create long-term plans that would mitigate a substantial amount of hazard risk, rather than ineffectively and inefficiently dealing with the problems on an event-by-event basis.

## Enforcement of Ordinances

Across the board, the regulations and/or ordinances routinely mention intent to reduce flood loss, but there are very few precise measures mentioned that would achieve this goal- with the exception of some ordinances that have been adopted in St. Tammany Parish. In fact, most of the language in the local regulations is very abstract and ambiguous, leaving little that can actually be enforced. Examples of the language used include:

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<sup>7</sup> Intergovernmental Panel on Climate Change (IPCC) *Fourth Assessment Report: Climate Change 2007*, Working Group I: The Physical Science Basis, 750 (S. Solomon, et al. eds., 2007) available at [http://www.ipcc.ch/publications\\_and\\_data/ar4/wg1/en/ch10s10-es-8-sea-level.html](http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch10s10-es-8-sea-level.html).

<sup>8</sup> *Id.*

<sup>9</sup> Robert Viguerie, *Coastal Erosion: Crisis in Louisiana's Wetlands*, 51 La. B.J. 85, 86 (2003)

- “All new construction and substantial improvements shall be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.”<sup>10</sup>
- “All new construction or substantial improvements shall be constructed by methods and practices that minimize flood damage.”<sup>11</sup>
- “All new construction or substantial improvements shall be constructed with materials resistant to flood damage.”<sup>12</sup>
- “All new and replacement water supply systems shall be designed to minimize or eliminate infiltration of floodwaters into the system.”<sup>13</sup>
- “New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharge from the systems into floodwaters.”<sup>14</sup>

In order for standards to be enforceable by a local government, they must be specific and clear. The way the ordinances currently stand, there is little that is enforceable. If the local government is to rely on a standard in a construction manual, building code or other standards document, then citizens would have a clearer idea of how to comply with the regulation and/or ordinance. This would allow the regulation and/or ordinance to become a more effective compliance measure. In order for regulations and/or ordinances to be measurable, they need to be specific. For example, the above ordinance from the city of Thibodaux: “All new *construction and substantial improvements* [how is this defined?] Shall be designed (or modified) and *adequately anchored* [how is this defined?] to prevent flotation, collapse, or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.” In order for citizens of coastal parishes to be able to follow a regulation and/or ordinance, they must be able to understand what the regulation or ordinance means and the standards that they must comply with. Local governments need to expand on their current ordinances to reduce ambiguity and increase clarity and specificity.

Throughout the coastal parishes, there are few specific scientific standards available for the floodplain administrator to use in approving or denying a permit. The current standards are vastly subjective and ask for speculation on the part of the Administrator in determining levels of danger. In order for the Administrator to be able to make consistent and reliable decisions regarding permitting, he or she needs to have concrete standards available to use in the decision making process. For instance, below is

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<sup>10</sup> Thibodaux Ordinance, Secs. 9.5-32(1). This ordinance is mirrored in every Parish that falls in Louisiana’s coastal zone.

<sup>11</sup> Thibodaux Ordinance, Secs. 9.5-32(2). This ordinance is mirrored in every Parish that falls in Louisiana’s coastal zone.

<sup>12</sup> Thibodaux Ordinance, Secs. 9.5-32(3). This ordinance is mirrored in every Parish that falls in Louisiana’s coastal zone.

<sup>13</sup> Thibodaux Ordinance, Secs. 9.5-32(4). This ordinance is mirrored in every Parish that falls in Louisiana’s coastal zone.

<sup>14</sup> Thibodaux Ordinance, Secs. 9.5-32(5). This ordinance is mirrored in every Parish that falls in Louisiana’s coastal zone.

an example that can be found in every coastal parish LCMP ordinance. :

Approval or denial of a development permit by the floodplain administrator shall be based on all of the provisions of this chapter and the following relevant factors: The danger to life and property due to flooding or erosion damage; The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner; The danger that materials may be swept onto other lands to the injury of others; The compatibility of the proposed use with existing and anticipated development; The safety of access to the property in times of flood for ordinary and emergency vehicles; The costs of providing governmental services during and after flood conditions, including maintenance and repair of streets and bridges, and public utilities and facilities such as sewer, gas, electrical and water systems; The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters and the effects of wave action, if applicable, expected at the site; The necessity to the facility of a waterfront location, where applicable; The availability of alternative locations, not subject to flooding or erosion damage, for the proposed use; The relationship of the proposed use to the comprehensive plan for that area.<sup>15</sup>

St. Tammany Parish provides much more specificity in their ordinances than other parishes in coastal Louisiana, as seen in the examples to follow. They regulate uses beyond what FEMA requires. For example, St. Tammany parish requires a permit for “clearing, grubbing, grading, displacement or removal of dirt” for any properties not exempted.<sup>16</sup> In order to get a permit for dirt removal, the applicant must provide a “detailed description of dirt work, boundaries of the area to be disturbed and the proposed sediment retention measures.”<sup>17</sup> St. Tammany has strict, objective requirements for the permit holders. Having specific parameters and specifications helps to keep enforcement uniform throughout the parish. For example, “the owner, builder or developer of a construction project shall cause the placement of a required sediment control measure for all side slopes and down slope boundaries of a construction area, unless a sedimentation basin designed to accommodate 3600 cubic feet of water and sediment for each acre of disturbed property is provided.”<sup>18</sup>

St. Tammany Parish has extensive drainage regulations. The parish requires a “drainage and paving plan to be stamped and certified by a licensed Louisiana State Registered Engineer for construction of commercial, industrial, institutional and certain multi-family developments, with the goal of improving pre-development runoff and reducing post-development runoff based on a minimum twenty-five year storm event.”<sup>19</sup> Also, parcels that are “0-2 acres in size are required to have a pre-development peak

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<sup>15</sup> Thibodaux Ordinance, Secs. 9.5-23.

<sup>16</sup> St. Tammany Parish Ordinance Sec. 7-042.00(5)(a).

<sup>17</sup> St. Tammany Parish Ordinance Sec. 7-042.00(5)(b).

<sup>18</sup> St. Tammany Parish Ordinance Sec. 7-042.00(5)(c).

<sup>19</sup> St. Tammany Parish Ordinance Sec. 7-050.00

runoff of at least 10% for a twenty-five year storm event, with on-site detention ponds optional.”<sup>20</sup>

## Community Planning: Land Use, Disaster, Future Growth

Both Florida and Oregon mandate comprehensive planning by local governments.<sup>21</sup> Their state legislations provide detailed guidance on what each plan will contain, including a hazard mitigation element.<sup>22</sup> The Institute for Business and Home Safety (IBHS) regards these states’ efforts as substantial.<sup>23</sup> The IBHS rating does not mean that the hazard plans are the best they could be, but they are among the best that have been devised so far. Future challenges include determining how to plan for evolving conditions stemming from global climate change and localized problems such as coastal land loss.

As pointed out in the report “Hazard Mitigation and Land Use Planning in Coastal Louisiana,” Florida and Louisiana share many of the same risks from coastal storms, primarily due to location, and often are impacted by the same storms.<sup>24,25</sup> The difference between these states; however, is the increased development pressure that has occurred along the Florida coast, resulting in more intensive land use and hazard mitigation planning.<sup>26</sup>

The Florida statutes require local governments to develop and implement comprehensive plans for development within their jurisdictions or to amend their existing plans to comply with certain requirements listed in the statute. The state statute requires that the comprehensive plan of all coastal jurisdictions include a coastal zone protection element containing hazard mitigation provisions.<sup>27</sup>

While coastal development in Louisiana has not reached the level or value of development in Florida, there are some areas that have grown exponentially in population and community wealth. This growth is partly because of the recreational opportunities close to the water, and partly because of the ability to quickly access coastal and offshore

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<sup>20</sup> St. Tammany Parish Ordinance Sec. 7-050.00(3)(a).

<sup>21</sup> T.L. Daniels, *et al.*, American Planning Ass’n, The Small Town Planning Handbook (1988).

<sup>22</sup> *See*, Fla. Stat. § 163.3177(6)(g), § 163.3178(1), (2)(d),(f),(h),(j); Or. Rev. Stat. § 197.175; Oregon Department of Land Conservation and Development, Goal 7: Areas Subject to Natural Hazards, Oregon’s Statewide Planning Goals, (A)(1) (2001), *available at* <http://www.lcd.state.or.us/LCD/docs/goals/goal7.pdf>.

<sup>23</sup> IBHS, Community Land Use Evaluation.

<sup>24</sup> ROD E. EMMER ET AL., HAZARD MITIGATION AND LAND USE PLANNING IN COASTAL LOUISIANA, 29 (Louisiana Sea Grant College Program 2007) *available at* <http://www.lsu.edu/sglegal/pdfs/CompPlanningReport.pdf>.

<sup>25</sup> The following are examples of storms that have impacted both Florida and Louisiana: Hurricanes Andrew (1992), Charley (2004), Dennis (2005), Wilma (2005), Katrina (2005).

<sup>26</sup> EMMER, *supra* note 25, at 29. (citing Fla. Dept. Of Community Affairs, Florida Assessment Of Coastal Trends 55-57 (2000); Fla. Stat. § 163.3178(1), (2)(h) (2006)).

<sup>27</sup> *Id.* (citing Fla. Stat. § 163.3161, § 163.3177, Fla. Stat. § 163.3177 (6)(g), (8), § 163.3178(1), (2)(d),(f),(h),(j) (2006)).



resources - including oil, gas, and fisheries. Additionally, much of this growth happened in a short time span due to migrations of families, and even whole communities, following coastal storms. For example, following Hurricane Katrina, many families moved from St. Bernard Parish to St. Tammany Parish.<sup>28</sup> While St. Tammany Parish is further north, portions of the parish are still within the coastal zone and experience flood and wind damage from coastal storms. Louisiana communities would benefit greatly from increased planning efforts, because of the potential for better planning to result in increased resiliency. Individuals often do not understand the true nature of the risks associated with living in coastal areas and may not be able or willing to take steps to protect themselves.<sup>29</sup> Increased community planning adds a layer of resiliency and in most cases increases individual resiliency.

In addition to having a comprehensive plan, Florida requires that the plan “include a coastal management element that addresses and protects the overall quality of the coastal environment.”<sup>30</sup> This includes addressing issues such as allowing for open space where an area is too hazardous for development. When a parish or municipal government develops a local land-use plan many of the gaps in general regulations can be filled in with specific policies or rules. Land-use plans are beneficial to communities, as they provide a path for growth and development into the future.<sup>31</sup> Additionally, when land-use plans are combined with disaster and hazard mitigation plans, the community becomes more resilient. It has been shown that when planning takes place on several levels, each in coordination with the others, more resilient communities are formed. For example, a community can use a hazard mitigation plan that maps out flood-prone areas when deciding where to place critical facilities or residential subdivisions. Development of a successful plan – whether it is a land-use plan, a hazard mitigation plan, or a disaster plan – takes time and should include stakeholder input. In some cases, hard decisions will need to be made, such as not allowing certain types of development in certain areas of high risk. By having community members on board throughout the process, they are likely to better understand why certain decisions were made and how those decisions will lead to a stronger community over time. In some extreme situations, relocation within or outside of the community may be the best option.

## Development in Floodplains/Siting

Currently, there is no requirement in most coastal parish ordinances to generate base flood elevation data for subdivisions of less than 5 acres or 50 homes (see example

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<sup>28</sup> Christine Harvey, *Longtime St. Bernard Residents find homes, and happiness, in St. Tammany*, NOLA.COM/NEW ORLEANS TIMES PICAYUNE, August 16, 2010, available at [http://www.nola.com/katrina/index.ssf/2010/08/longtime\\_st\\_bernard\\_residents\\_find\\_homes\\_and\\_happiness\\_in\\_st\\_tammany.html](http://www.nola.com/katrina/index.ssf/2010/08/longtime_st_bernard_residents_find_homes_and_happiness_in_st_tammany.html)

<sup>29</sup> EMMER, *supra* note 25, at 30.

<sup>30</sup> *Id.*

<sup>31</sup> James E. Holloway & Donald C. Guy, *Smart Growth and Limits on Government Powers: Effecting Nature, Markets and the Quality of Life Under the Takings and Other Provisions*, 9 Dick. J. Env'tl. L. & Pol'y 421, 423 (2001)

from St. James Parish, in footnote).<sup>32</sup> Without requiring this information for subdivision development, it is possible that the subdivision could be developed in a high-risk hazard area. It is very important to have detailed information on hazard areas, so that development in those risky areas can be avoided through planning. On the other hand, St. Tammany parish has stringent requirements for subdivision development. St. Tammany parish will not allow for subdivision development and fill associated with lot development if it results in a reduction in the 100-year flood-plain storage capacity.<sup>33</sup> It is worth noting that the 100-year flood plain storage capacity requirement is not required for subdivision development under FEMA's National Flood Insurance Program.<sup>34</sup>

In St. Bernard Parish, current ordinances allow for manufactured homes to be placed in floodways or coastal high hazard areas if certain conditions are met.<sup>35</sup> Manufactured homes are already less resilient to natural disasters, and putting them in the floodway makes them highly prone to damage during a disaster. Communities need to consider the location and ability of a given structure to withstand damage when making development decisions, as these issues will impact overall community resilience. As stated in the Best Practices Manual for Development in Coastal Louisiana,

Deciding where to locate new development has many implications for the communities' safety, livability, and resilience. Location-based decisions can influence design, construction methods, building materials, size and building use, all of which influence cost. The result of strategic site development, innovative design, and common sense can result in reduced risk, reduced downtime in a disaster, and increased functionality during a disaster event.<sup>36</sup>

It is important that communities understand what areas are most vulnerable to hazards, and this can be done through a hazard assessment. Hazard assessments have been shown to "help prevent locating a high-density residential project in a hazard zone by identifying and mapping, through existing or newly developed data, the location of zones prone to flood, erosion, subsidence, high-wave velocity or other areas of concern."<sup>37</sup> Data for such an assessment can be gathered from a number of places, including the Advance Circulations model (ADCIRC) and Geographic Information Systems (GIS) mapping tools, local knowledge, and ground-truthing of flood models. For example, the Louisiana Sea Grant specialists document high-water marks throughout the flooded area after a flooding event has occurred. Unlike the FEMA flood maps, this data reflects the true risk of flooding under certain storm scenarios, and can be extremely valuable to a community in future planning.

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<sup>32</sup> St. James Parish Ordinance Secs. 50-93(c). Base flood elevation data shall be generated for subdivision proposals and other proposed development, including the placement of manufactured home parks and subdivisions that are greater than 50 lots or five acres, whichever is lesser, if not otherwise provided pursuant to section 50-37 or section 50-67(8).

<sup>33</sup> St. Tammany Parish, La., Ordinance Sec. 7-002.00(13)(a)(2013).

<sup>34</sup> 44 C.F.R. § 60.3 (2009).

<sup>35</sup> St. Bernard Parish, La., Ordinances Secs. 12-62, 12-63, 12-64 (2013).

<sup>36</sup> *Best Practices*, *supra* note 3, at 74.

<sup>37</sup> JAMES WILKINS ET AL., LOUISIANA COASTAL HAZARD MITIGATION GUIDEBOOK 84 (Louisiana Sea Grant, May 2008).

The *Louisiana Coastal Hazard Mitigation Guidebook* points out that there are two ways to increase resiliency in areas where subdivision standards are lacking. The first is to require that “all subdivisions must be suitable for their intended use and that no resident or homeowner will be placed at undue risk from erosion, subsidence, high-velocity wave action or flooding.”<sup>38</sup> The second way is to require an overall plan for the development that progresses as the development moves along the application process, from conception to engineering, ending with a final plan. It is important to note that “each of these steps can take considerable time and money for the applicant-subdivider, so it is important that the issue of hazard mitigation and siting be addressed as early as possible in the subdivision process to avoid expensive redesigns.”<sup>39</sup>

Moreover, subdivision development in the coastal parishes only requires “adequate drainage,” with no precise calculation for the amount of drainage that would be necessary to prevent flooding.<sup>40</sup> Without a precise drainage requirement, there is no standard to enforce. As noted above, St. Tammany Parish has requirements to ensure that there is proper drainage available where subdivisions may be developed.<sup>41</sup> Many subdivisions have problems with the roads and streets not draining properly during hard rain or storms. Developers need to plan for roads to be raised to a level where flooding will not occur. For example, as part of this project, St. Tammany Parish is adding a requirement that developers build roads to a minimum elevation of 6.0’ NAVD ’88 GEOID 03. This would greatly increase the resiliency of the parish, as this height is modeled as a 10-year storm surge event, similar to Hurricanes Gustav and Ike. In previous storm events, residents in older subdivisions with lower roads have become trapped during storms due to flooding and washouts, greatly impeding evacuation and slowing the rate at which residents can return after a storm. Requiring a higher roadbed will reduce the likelihood of washouts, increase efficiency of evacuation procedures, and reduce spending on road repair after a storm – all of which greatly add to the resiliency of the parish.

While raising roads is a viable option to increase resiliency in St. Tammany parish, this technique may not work in all locations due to restrictions of already-existing drainage patterns. Other areas may want to consider the use of green streets. Green streets use planted areas to slow the speed of water entering the drainage system, while at the same time providing filtration and nutrient removal and even removing some of the water through plant up-take.<sup>42</sup>

## Increased Development Standards in High Risk Areas

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<sup>38</sup> *Id.* at 88.

<sup>39</sup> *Id.* at 89.

<sup>40</sup> Abbeville, La., Municipal Ordinance Secs. 14-34. These ordinances are mirrored in every Parish that falls in Louisiana’s coastal zone.

<sup>41</sup> St. Tammany Parish Ordinance Sec. 7-050.00

<sup>42</sup> ODEFY, J., ET. AL., BANKING ON GREEN, A LOOK AT HOW GREEN INFRASTRUCTURE CAN HELP MUNICIPALITIES SAVE MONEY AND PROVIDE ECONOMIC BENEFITS COMMUNITY-WIDE (American Society of Landscape Architects, April 2012).

In areas of extreme risk for natural hazards, local governments need to increase development requirements commensurate with the likelihood of a hazard occurring. Individuals should be discouraged from building in those unsafe areas. Local governments should establish a zone of extreme risk and increase the building requirements in those areas. This could result in a gradual uptick in relative standards for resiliency in high-risk areas. Stricter building requirements require a connection between what the government is exacting and the benefit to the whole community.<sup>43</sup> Emphasis should be placed on the fact that these measures will help the community avoid losing another two or more years to recovery efforts after a storm event.

Zones of extreme risk may be created by zoning commissions amending existing zoning ordinances and maps for consideration by the local entity responsible for enacting new zoning regulations.<sup>44</sup> Parishes without zoning and planning commissions can amend subdivision regulations to address hazards such as sea level rise, erosion or wetlands conservation.

A clear statement of the need for hazard mitigation policies accompanied by scientific and engineering data is necessary for public acceptance of such policies. The exact locations of hazard zones must be determined by the best available science and publicized as widely as possible. Additionally, local knowledge should be taken into consideration, as long-term residents may have seen firsthand changes to landscape and shifts in hazardous areas. The proposed restrictions on the use of private property must be explicit and the nexus between the restrictions and the abatement of the hazards must also be documented and clear. The model ordinance will need to encompass existing land use planning authority such as zoning and subdivision requirements by clearly and explicitly linking its requirements to them. A major problem that exists in many jurisdictions is that subdivisions of five lots or less are often exempt from subdivision regulations.<sup>45</sup> Such exemptions present a significant roadblock to hazard mitigation planning and must be addressed.

Regulatory standards can employ several strategies:

- Designating floodways for open space uses such as parks or festival space, agriculture or conservation and restricting other uses
- Allowing development to avoid floodplains by relaxing standard grid layouts, lot sizes, locations, etc.
- Reduce density by increasing minimum lot size requirements in hazardous areas<sup>46</sup>

Several variations in zoning approaches can be employed in hazard mitigation. (1) Overlay zones are imposed over other designated land uses as an additional requirement. It can be applied over any other land use zoning. The National Flood

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<sup>43</sup> See *Dolan v. City of Tigard*, 512 U.S. 374, 386 (1994), and *Nollan v. California Coastal Comm'n*, 483 U.S. 825, 837 (1987).

<sup>44</sup> EMMER, *supra* note 25, at 42.

<sup>45</sup> *Id.* at 43.

<sup>46</sup> *Id.* at 42-43.

Insurance Program (NFIP) is a type of overlay zone that stacks atop other zoning such as, for example, single-family residential (A-1 or R-1) zones, and the underlying use will only be permitted if it complies with the overlay zone requirements and the A-1 zoning requirements.<sup>47</sup> (2) Performance zoning establishes standards for the effects of property use, allowing different uses as long as the effects of the uses meet the standards. Examples of performance standards are air quality and density and could conceivably include flood risk. This approach allows more flexibility and variation of performance standards over different zones.<sup>48</sup> (3) Nonconforming land use regulations address uses that were in existence before zoning requirements were imposed and are considered to be “grandfathered” in that they are not required meet the current land use requirements. Nonconforming use regulations usually restrict the structure or use to the original use and the zone cannot be expanded, moved or changed to other uses. Many nonconforming use zones do not allow a nonconforming structure to be rebuilt if it is destroyed and a community could amend its nonconforming use ordinance to prohibit reconstruction of severely damaged structures after a flood in Special Flood Hazard Areas.<sup>49</sup> (4) Setback requirements can be very effective in mitigating hazards especially when hazardous zones can be accurately delineated, such as shoreline erosion or storm surge. Storm surge modeling is becoming more accurate and erosion rates can be calculated fairly accurately by direct measurements.<sup>50</sup> Two examples of employing hazard mitigation practices include: requiring structures to be set back a sufficient distance from an eroding shore such that the structure will not be affected by erosion during its expected life, or prohibiting structures within certain storm surge zones. Less restrictive measures could also be employed, such as limiting density and prohibiting critical infrastructure in the area inundated by the storm surge of record. The setback requirements do not have set geographic boundaries, but they do change as conditions such as sea level or erosion rates change. By allowing for migrating setback requirements, the zoning ordinance would not need to be continually updated as the landscape changes and will provide local governments with the ability to respond quickly if large coastline changes occur in a short amount of time, such as a major erosion event that occurs as a result of a storm.

As explained in Hazard Mitigation and Land Use Planning in Coastal Louisiana:

Recommendations for the Future,

Local governments have a duty to make the community a safe and healthy place to live and work by reducing damage from natural hazards, such as hurricane storm surge or river flooding. Zoning is a major tool for reducing flood damage within a parish or community. To gain maximum benefits from zoning, a comprehensive plan must be enacted by the planning commission or an existing comprehensive plan must be amended to include a natural hazards element. Overlay zones, performance zoning, nonconforming land uses, and setbacks can contribute to making a safer place to live and work.<sup>51</sup>

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<sup>47</sup> *Id.*

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> *Id.*

<sup>51</sup> *Id.* at 44.

It is often difficult for local governments to adopt extensive land use regulations because of property rights issues, economic concerns or public distrust. Some local government leaders have expressed the need for state mandated hazard mitigation requirements to relieve the pressure on local governments thereby allowing them take stronger measures to protect public safety.

## **Educating Local Governments and Citizens**

Local governments and community citizens need increased education about the scope of hazards they face. Communities need to be educated about how subsidence, sea level rise, erosion, flooding and other hazards are caused or worsened. If communities can understand what is happening environmentally, then they can make a connection between those processes and the dangers associated with building in high-risk areas.<sup>52</sup> Education should be a major area of focus, because the public must understand the scientific processes so that they can understand the associated risks. Connections need to be made between risky development and cost to the local government when disaster strikes. Residents and property owners in coastal areas also need to clearly understand that they may face increased risks in certain areas, especially if they do not take steps to strengthen their home or workplace. Moreover, local governments need to fully understand the extent their zoning authority to prevent development in high-risk areas, and they should also take time to explain the zoning process to the community. Many Louisiana property owners have misconceptions about the purpose of zoning, do not understand the benefits, and may claim a taking has occurred when in fact there is none. By educating the community before the process begins, issues such as these may be reduced or avoided altogether.

Education and outreach can occur in many different settings. Local governments should consider attending large local events, such as festivals, to distribute fact sheets. Communities can also provide workshops and can utilize the resources of agencies, non-profits, and outreach groups such as Sea Grant. Another idea, presented in the Louisiana Coastal Hazard Mitigation Guidebook, is to “supplement the information depicted on flood insurance rate maps by showing rates of shoreline erosion, projected future shorelines, and storm surges of record and depths of flooding at known locations throughout the community.”<sup>53</sup>

## **Possibility of Local Government Liability for Inadequate Planning**

In every parish there is a disclaimer of liability for the local government in case flood damage occurs in an area that was permitted by the local government.<sup>54</sup> This

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<sup>52</sup> HOLLOWAY & GUY, *supra*, at 462.

<sup>53</sup> WILKINS, *supra* note 38, at 67.

<sup>54</sup> “The degree of flood protection required by this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. On rare occasions greater floods can and will

disclaimer has questionable validity because Louisiana case law makes it clear that local governments have and can be found liable in Louisiana for actions that cause or increase the severity of flooding. Most local governments in coastal Louisiana have assumed responsibility for protecting their residents from flooding through levee and drainage boards,<sup>55</sup> thereby making implied assurances that their actions will not exacerbate flooding. If followed at the parish and community level, the No Adverse Impacts (NAI) principles laid out by the Association of State Floodplain Managers can help protect local governments from liability for flooding.<sup>56</sup>

Court decisions in Louisiana have held in certain situations that, local governments can be held liable for allowing development in flood prone areas, and by issuing permits in high-hazard zones that cause or exacerbate flooding. After historically going through different government immunity regimes, the Louisiana legislature has adopted what today is called the “discretionary function statute.”<sup>57</sup> The statute provides immunity for Louisiana “public entities in performance of their ‘policymaking or discretionary acts.’”<sup>58</sup> However, the immunity does not cover acts that are “not reasonably related to the legitimate governmental objective” or acts that are “criminal, fraudulent, malicious, intentional, willful, outrageous, reckless, or flagrant misconduct.”<sup>59</sup>

Prior to the enactment of the discretionary function statute, the Louisiana Supreme Court in *Eschete v. City of New Orleans*<sup>60</sup> found the city of New Orleans liable. The court stated the city was not liable for failing to provide adequate drainage, but for knowingly adding subdivisions that the city knew would cause or exacerbate flooding because of drainage systems that were ill equipped to handle the addition.<sup>61</sup> The reasoning in *Eschete* was followed in *McCloud v. Jefferson Parish*<sup>62</sup> and *Keich v. Barkley Place, Inc.*<sup>63</sup> The discretionary function statute has since limited the power of the *Eschete*

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occur and flood heights may be increased by manmade or natural causes. This article does not imply that land outside the areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This article shall not create liability on the part of the community or any official or employee thereof for any flood damages that result from reliance on this article or any administrative decision lawfully made hereunder.” - St. Bernard Parish, La., Ordinance, Sec. 10.5-12 (1995)

<sup>55</sup> La. Const. Art. VI § 38(A) (2006) (stating that “The legislature may provide by law for the consolidation, division, or reorganization of existing levee districts, may create new levee districts, or may establish regional flood protection authorities as authorized by law”)

<sup>56</sup> JON KUSLER, NO ADVERSE IMPACT AND THE COURTS: PROTECTING PROPERTY RIGHTS OF ALL (Ass’n of State Floodplain Managers, 2007).

<sup>57</sup> James Wilkins, *Is Sea Level Rise “Foreseeable”? Does it matter?*, 26 J. Land Use & Envtl. L. 437, 462 (2011) (citing La. R.S. § 9:2798.1).

<sup>58</sup> *Id.* (quoting § 9:2798.1(B) (2011)).

<sup>59</sup> *Id.* (quoting § 9:2798.1(C)(1), (2)).

<sup>60</sup> 245 So. 2d 383 (La. 1971).

<sup>61</sup> *Id.* at 463-64.

<sup>62</sup> *Id.* at 464 (finding the parish’s full knowledge that a new subdivision would overwhelm a drainage system was liable for the damage that followed from flooding (citing *McLeod v. Parish of Jefferson*, 383 So. 2d 477, 478 (La.App. 4th Cir. 1980)).

<sup>63</sup> *Id.* at 465 (finding liability for failure to implement a program ensuring that a new subdivision would not cause flooding to a preexisting subdivision, which ultimately lead to the flooding of the preexisting neighborhood (citing *Keich v. Barkley Place, Inc.*, 424 So. 2d 1194, 1199 (La.App. 1st Cir. (1982))).

holding,<sup>64</sup> but it has not fully foreclosed on the possibility of liability in similar situations.<sup>65</sup>

As Wilkins points out, “Several cases have held that . . . alleged negligent acts were not protected by the discretionary function statute.”<sup>66</sup> In *Akins v. Jefferson Parish* the court held that when the parish implemented drainage systems and intentionally and recklessly failed to fix a defect of the systems after notice, there is a cause of action.<sup>67</sup> Likewise, *Mitter v. St. John the Baptist Parish* held actions that prevented flooding in certain areas, but caused flooding in others would not be protected under immunity.<sup>68</sup>

Some courts have found liability without even mentioning the discretionary function statute.<sup>69</sup> For example, the Louisiana Supreme Court found a failure to fix an electrical problem in a timely fashion on water pumps was negligence constituting liability.<sup>70</sup> Similarly, the Louisiana First Circuit Court of Appeals found negligence and thus liability for approving development that resulted in flooding of a preexisting neighborhood.<sup>71</sup> As more and better information on hazards is compiled and disseminated local governments will find it harder to escape liability based on discretionary function immunity.<sup>72</sup> Local governments will be hard pressed to argue that it was within their discretion to place unsuspecting people in the path of well-known dangers.<sup>73</sup>

Negligence is not the only theory for finding liability; courts have found governments liable under takings theories as well.<sup>74</sup> For Example, in *Taylor v. State Dept. of Transportation*, the court found a taking “[w]hen the state highway department’s bridge project altered the flow of two creeks” causing increased velocity of flow across the plaintiff’s land.<sup>75</sup> There is no sovereign immunity defense against takings claims for local governments.<sup>76</sup> However, government liability based on takings, like those based on negligence, are not without limit. One court employed an assumption of the risk theory in order to free a government from takings based liability for failing to put a flood control structure on a reservoir, the absence of which ultimately lead to flooding.<sup>77</sup>

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<sup>64</sup> See *Gleason v. Nuco*, 1999-2954 (La.App 1 Cir. 12/22/00), 774 So. D 1240, 1243 (finding the discretionary function statute shielded the government from liability for approving a subdivision plat with knowledge of flood problems); see also *Fossier v. Jefferson Parish*, 07-926 (La.App 5 Cir. 4/15/08), 985 So. 2d 255, 256, 259 (finding “the parish’s decision not to have back-up power for its drainage pumps” that lead to flooding was shielded from liability by the discretionary function statute.).

<sup>65</sup> *Wilkins*, *supra* note 58, at 465.

<sup>66</sup> *Id.* at 466 (emphasis added).

<sup>67</sup> *Id.* at 466-67 (citing 529 So. 2d 27, 30, (La.App 5th Cir. 1988)).

<sup>68</sup> *Id.* at 467 (citing 05-375 (La.App. 5 Cir. 12/27/05), 920 So. 2d 263)).

<sup>69</sup> *Id.*

<sup>70</sup> *Id.* (citing *Saden v. Kirby*, 660 So. 2d 423, 430 (La. 1995)).

<sup>71</sup> *Id.* (citing *Warwick Apartments Baton Rouge v. State Through Department of Transp. & Dev.*, 633 So. 2d 895, 899 (La. App. 1st Cir. 1994)).

<sup>72</sup> *Id.* at 488.

<sup>73</sup> *Id.* at 488-89.

<sup>74</sup> *Id.* at 470.

<sup>75</sup> *Id.* (citing 2003-0219 (La.App 3 Cir. 6/23/04), 879 So. 2d 307)).

<sup>76</sup> *Id.*

<sup>77</sup> *Id.* at 471. (citing *Eubanks v. Bayou D’Arbonne Lake Watershed Dist.*, 742 So. 2d 113, 114-16 (La.App. 2nd Cir. 1999)).



## Flood Administrator

In some coastal parishes, there are no special requirements, education or specific knowledge required to be appointed as the parish floodplain administrator. This can be a problem if the Administrator has no expertise in the area of land-use planning, yet they are making all the land use decisions in the parish. In some local governments floodplain administrators are not trained or do not possess engineering and technical expertise best suited for the job. Ideally, the floodplain administrator should have prior experience or education in planning, so that they can adequately understand the complex factors that go into municipal and parish planning. Additionally, a floodplain administrator with experience or training related to zoning, drainage systems, and community resiliency would greatly benefit the parish. Many organizations, such as Sea Grant, offer free training and provide tools that floodplain managers can use to develop these skills. In St. Tammany Parish, the floodplain administrator is the entire department of permits and inspections.<sup>78</sup> This department possesses the engineering and technical expertise required to properly plan and permit for land-use, disasters and future growth.

## Variances

Communities need to be very cautious when issuing variances to existing zoning and planning ordinances. Parishes that fail to follow FEMA regulations concerning variances could have their National Flood Insurance Coverage revoked.<sup>79</sup> The FEMA administrator has not established absolute criteria for granting variances, but the Administrator has set forth certain standards that must be followed. St. Tammany Parish has adopted the FEMA regulations as they stand in the Federal Code of Federal Regulations.<sup>80</sup> The “granting of variances generally is limited to a lot size of less than one-half acre,” though deviations from that size are allowed.<sup>81</sup> If a variance is being considered on a lot that is larger than one-half acre, the community must require higher technical justification to issue the variance.<sup>82</sup> Variances shall not be issued by a community within any designated regulatory floodway if any increase in flood levels during the base flood discharge could result.<sup>83</sup>

A variance “may be issued by a community for a new construction or substantial improvements to be erected on a lot of one half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level,”<sup>84</sup> but only if there is “(1) a showing of good and sufficient cause, (2) a determination that failure to grant the variance could result in exceptional hardship to the applicant, and (3) a determination that the granting of a variance will not result in increased flood heights,

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<sup>78</sup> St. Tammany Parish Ordinance Sec. 7-023.00.

<sup>79</sup> 44 C.F.R. § 59.24(b).

<sup>80</sup> St. Tammany Parish Ordinance Sec. 7-024.00.

<sup>81</sup> 44 C.F.R. § 60.6(a).

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> *Id.* at §60.6(a)(2).

additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization on the public, or conflict with existing local laws or ordinances.”<sup>85</sup>

Additionally, “variances can only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard.”<sup>86</sup> Local governments need to keep diligent records on the special circumstances that exist when each variance is issued, and they need to keep records that the 3-part FEMA test has been conducted before issuing a variance. These records must be submitted to FEMA in its annual or biennial report.<sup>87</sup>

When any variance is issued, the community must notify the applicant for the variance that “(1) the issuance of the variance to construct a structure below base flood level will result in increased premium rates for flood insurance up to amounts as high as \$25 for \$100 of insurance coverage and (2) such construction below the base flood level increases risks to life and property.”<sup>88</sup>

## Enforcement & Penalties

Enforcement of local regulations is the only way to ensure compliance. When surveying the ordinances for the coastal parishes, very few parishes have a means of enforcement for any of these ordinances. Some have small fines and potential jail time, but most have no enforcement; even though Louisiana revised statute 33:4728 gives parishes the power to enforce building and development codes. Louisiana revised statute 33:4728 provides that if there is a “building or structure erected, structurally altered or maintained” that is in violation of any land use provision, the local authorities of the municipality can “institute any appropriate action or proceeding to prevent the unlawful erection, alteration or maintenance, and the municipality can restrain, correct or abate the violation to prevent the occupancy of the building.”<sup>89</sup> Enforcement is done “by the city architect or other officer authorized to issue building permits that is empowered to cause any building, structure or premises to be inspected.”<sup>90</sup> Over time, the amount of the fine can add up; the owner, lessee or tenant of the building

where the violation has been committed or exists, or the general agent, architect, builder, contractor, or any other person who commits, takes part in, or who assists in any violation or who maintains any building or premises in which any violation exists shall be fined not less than ten dollars and not more than twenty-five dollars or be imprisoned for not more than thirty days for each day that the violation

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<sup>85</sup> *Id.* at §60.6(a)(3).

<sup>86</sup> *Id.* at §60.6(a)(4).

<sup>87</sup> *Id.* at §60.6(a)(6).

<sup>88</sup> *Id.* at §60.6(a)(5).

<sup>89</sup> La. R.S. 33 § 4728 (2006).

<sup>90</sup> *Id.*

continues.<sup>91</sup>

St. Tammany Parish has strict enforcement of their land-use planning ordinances. For example, if there is a violation of the drainage requirements for residential development, it constitutes a misdemeanor in which there is a fine between \$100 and \$500 per day and/or imprisonment for up to 30 days.<sup>92</sup> Moreover, St. Tammany Parish has a Code Enforcement Division of their parish government: “The Code Enforcement Division is responsible for all investigations and enforcement actions for the St. Tammany Parish’s land use regulations, building codes and fill ordinances.”<sup>93</sup> “Code Enforcement Officers handle the matter from the initial complaint all the way” to either compliance with the ordinances or any appropriate legal action through St. Tammany parish bureau of administrative adjudication or the 22<sup>nd</sup> judicial district court in Covington, Louisiana.<sup>94</sup> St. Tammany parish has six employees on staff in the Code Enforcement Division.<sup>95</sup> According to the Parish Code Enforcement Division office, enforcement actions are taken about twice per month.<sup>96</sup>

## Conservation and Protection of Wetlands/At-Risk Landforms

As outlined above, coastal wetlands provide extremely important services as buffers to communities from coastal storms and habitats for many coastal and offshore species. Therefore, communities should take steps to protect, conserve, and enhance these areas where they exist. One way to do this is through the use of living shorelines. Living Shorelines use live organisms, such as plants and oyster reefs, to provide protection and stability to the coastline. These can be used in the place of hard structures, such as bulkheads or seawalls, which prevent the migration of wetland plant and animal species. In addition to allowing migration, in some cases living shorelines have the added benefit of generating additional land through sedimentation.<sup>97</sup>

There is little protection of at-risk landforms along the coast. Scientific studies on the nature of Cheniers, their benefits to humans and ecosystems, and human threats to these functions have led to modest protection measures after significant time and effort. In some areas, however, protection does exist. For example, the Louisiana Sea Grant Law & Policy program played a role in the adoption of an ordinance to protect Cheniers in Cameron Parish.<sup>98</sup> Many of these at-risk landforms provide a first line of defense and

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<sup>91</sup> *Id.*

<sup>92</sup> St. Tammany Parish Ordinance, Sec. 7-002.00(E).

<sup>93</sup> St. Tammany Parish Website, Code Enforcement/Violations, [http://www.stpgov.org/departments\\_code.php](http://www.stpgov.org/departments_code.php).

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> Interview with St. Tammany Parish Code Enforcement Office, Sept. 11, 2012.

<sup>97</sup> MASGC Focus on Living Shorelines, Mississippi-Alabama Sea Grant Consortium, <http://www.masgc.org/page.asp?id=235>.

<sup>98</sup> Cameron Parish Coastal Zone Management Ordinance, Sec. 5 ½ - 4, Sec. 5 ½ - 11. The amendment to the Ordinance was adopted on September 10, 2012. Under the amendment, cheniers are classified as critical landforms that “are unique geological features that are critical components of the ecology of coastal Louisiana” and “serve as critical wildlife habitat and offer substantial protection against

reduce the risk of flooding from storm surge, and further protection would provide increased community resiliency at little to no cost to the community (as compared to building a levee).

## **Local Coastal Management Programs: Regulatory Structure Pertaining to Coastal Safety**

Most local coastal programs currently focus on natural resource protection and habitat conservation. The local coastal programs aim to ensure ecologically sound development in order to “preserve and enhance the resources of the coastal zone,” and to “protect wildlife, fisheries, aquatic life, estuarine, and other water resources.”<sup>99</sup> The primary focus of most of the local coastal programs is to inhibit salt-water intrusion, reduce subsidence, reduce erosion, stabilize banks and prevent water pollution.<sup>100</sup> While it is very important to protect Louisiana’s natural resources, Louisiana’s coastal human populations also need protection from natural hazards. Currently, very few local coastal programs include important provisions on protecting local communities from flooding and other risks associated with natural hazards. Seeing the high level of risk associated with living on the Louisiana coast, local governments should consider promoting sustainable development practices to prevent development in high risk areas...

Some local coastal programs carry as an objective “promoting public safety, health and welfare.”<sup>101</sup> This objective could be strengthened to protect Louisiana citizens from the harms of natural hazards like storm surge, hurricanes and flooding. A public safety objective gives a local government the ability to restrict development in high-hazard low-lying coastal areas. For example, St. Tammany Parish’s Local Coastal Program has used this objective to encourage development on land five feet or more above sea level and on lands where flood and storm hazards are minimal.<sup>102</sup> All local coastal programs should include this objective, which will empower them to further restrict dangerous development and protect local, coastal populations.

## **Local Coastal Programs Need to Be in Consultation and/or Collaboration with Floodplain Administrators**

In most coastal parishes, there is no requirement that the floodplain administrator and the local coastal program administrator consult with one another. Both of these

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coastal storm surge and flooding.” The amendment then limits surface alterations of the cheniers to the maximum extent practical and provide for local coastal program review.

<sup>99</sup> Coastal Management Plan for Calcasieu Parish, Calcasieu Parish Police Jury, Oct. 16, 1986.

<sup>100</sup> See Terrebonne Parish Coastal Zone Management Program, Terrebonne Parish Consolidated Government, Department of Planning & Economic Development, Coastal Zone Management Division, April 2000.

<sup>101</sup> Local Coastal Program, St. Tammany Parish Police Jury, Department of Development, May 1992.

<sup>102</sup> *Id.*

agencies are responsible in part for promoting safe and sustainable development in the Louisiana Coastal Zone and should work in tandem to protect communities in areas that are prone to flooding. Specifically, they should ensure that they are controlling development in a consistent manner.

St. Tammany parish not only has its floodplain administrator working with the local coastal program manager, but also its local planning commission works with both groups as well. The Orleans Parish's Coastal Management Program states that one of the purposes of the local coastal program is to provide a land-use plan that will work in conjunction with Orleans Parish comprehensive land-use plan, building code and floodplain ordinances.<sup>103</sup> Orleans Parish could be a model of how various land-use planning groups should work together for progress and consistency.

### **Implementation: From Knowledge to Regulation**

Due to variations in topography, storm surge and wind damage in one parish or municipality will cause a different set of problems from the same surge depth and wind speed in another area. Similarly, how a community deals with those hazards – both in the planning stage and in the response stage - depends on a number of variables, such as political will, cultural heritage, and economic resources available. Therefore, it is important that each community approach regulation in a way that is best suited for its needs:

A flexible approach for implementation is needed so that it can be adapted to the particular characteristics of each parish, taking into consideration factors such as protecting life and property from coastal hazards, conserving the environment, promoting business and respecting private property rights. The strategy recommended is a light-handed, flexible approach that can easily be adopted for each parish. This approach recognizes that government can implement programs through numerous mechanisms such as knowledge, information, guidance, policy, industry standards, existing authority and even new regulations.<sup>104</sup>

Knowledge of risks is an obvious, but often overlooked factor in hazard mitigation planning. Professionals who spend their careers dealing with information generated by government agencies and academic institutions can easily forget that the average everyday person in the streets is often totally ignorant of the “facts” they take for granted. Local observations can impart some sense of change, but the extent, magnitude and long-term implications are seldom obvious to the casual observer. Thus, planning decisions are often made without enough knowledge. Professionals and their local government partners must do a better job of disseminating information through extension, outreach and education networks such as the Sea Grant Marine Extension programs, NOAA Coastal Services Center and the like.<sup>105</sup> However, it is important to note that

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<sup>103</sup> Coastal Management Program, Orleans Parish, May 1985.

<sup>104</sup> WILKINS, *supra* note 38, at 68.

<sup>105</sup> *Id.* at 69.

while knowledge of detailed scientific information is essential, if it is disseminated in a manner that is difficult to understand, the information may be misconstrued, or worse, ignored. Therefore, it is important to seek assistance with making sure the presentation of the information is done in a way that will successfully increase the understanding of the target audience.

The information that is provided to the public can even go a step further by quantifying the risks such as delineating the exact boundaries of a known flooding area, such as the 100-year flood plain. Such knowledge can be used for planning and development decisions.<sup>106</sup>

After communities have information on the risks, providing guidance to businesses and residents is the next logical step. Guidance informs people how to adapt to risks and mitigate hazards. Guidance can include recommended construction techniques or siting recommendations.<sup>107</sup>

After communities begin incorporating guidance, and seeing the benefits of it, they may be ready to adopt policies that, either formally or informally, implement the guidance: “Policy reflects the general principles that are followed in management of the government’s public affairs. Policy often reflects the desires and wishes of the community or public, since policy commonly originates from leaders elected by the community.” Policy can take several forms ranging from informal – “that’s just the way we do it here” – to written policies that are incorporated into existing regulatory programs. Informal policy can include encouraging building above the base flood elevation and can be promoted traditional outreach methods such as written material, seminars or workshops.<sup>108</sup>

Private companies develop industry standards for various reasons: because early adopters demonstrate benefits, to avoid lawsuits, public opinion or government encouragement and policies. Industry standards avoid problems associated with regulation such as public resistance and property rights issues.<sup>109</sup>

Often existing laws and regulations are flexible enough to allow the inclusion of hazard mitigation measures in permit requirements, especially if the language in the regulation deals with hazard mitigation or public safety. Permit programs that leave many details to the discretion of a regulatory agency are better suited to this type of flexibility than ministerial acts that allow no discretion in applying absolute rules. Discretionary regulations may state a goal and allow the administrator discretion in what methodology can be allowed to achieve the goal. So the regulation may say to reduce flooding risk but not state how that is to be accomplished. Guidance and public policy may then form the basis for the safety requirement. Earlier in the development process more discretion is

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<sup>106</sup> *Id.*

<sup>107</sup> *Id.* at 70.

<sup>108</sup> *Id.* at 72.

<sup>109</sup> *Id.*

usually available than at the actual building phase.<sup>110</sup>

New regulations are difficult to implement but at some point they become necessary. For example Louisiana did not have a unified building code until Hurricane Katrina induced lawmakers to reduce wind damage by adopting parts of the Uniform Construction Code. Tragedies often become “teachable moments” but the window closes quickly.

## Conclusion

The Louisiana coast frequently experiences hazardous event exposure. The increasing number and intensity of coastal storms and other natural hazards has put people and property at risk along Louisiana’s coast, and current local regulations are not adequate to ensure complete protection of local communities from disaster. One of the areas that the Louisiana Department of Natural Resources emphasizes is addressing coastal resiliency and mitigating natural hazards. In order for Louisiana’s local governments to be more prepared for natural hazards they need to work on developing comprehensive land-use plans which include zoning and better planning and siting requirements for subdivision development. All of this in an effort to reduce or prevent development in floodplains and other high risk areas and to have greater enforcement mechanisms in place to ensure compliance with land use rules. Local governments have the ability and authority to engage in planning and zoning activities. These activities can help prevent development in high-risk areas, while at the same time protect natural features, such as wetland and Cheniers that provide protection from flooding and surge events. Similarly, local governments can build more resilient communities by enacting heightened building and construction standards in hazard areas that are identified options for enactment by the local coastal program enactment. In some cases, raised roads that better withstand flooding can greatly increase the resiliency of a community.

Fundamentally, local governments as well as local citizens need to be educated more about coastal hazards in Louisiana and the risks they pose. Local governments need to understand the potential liability they face as a result of issuing development permits in high-risk areas. Most importantly, local coastal program documents should be amended to provide more elements of hazard mitigation and coastal safety. All of these policies could be implemented in various ways from new regulation, to industry standards, to policy or through existing law.

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<sup>110</sup> *Id.*