



COASTAL
HIGH
HAZARD
STUDY
COMMITTEE

FINAL
REPORT

FEBRUARY 1, 2006



Florida Department of Community Affairs
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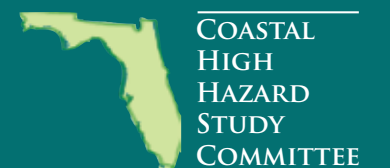
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INTRODUCTION

In 2005, the population of the State of Florida was estimated to be approximately 16 million people and projected to increase to nearly 25 million by the year 2025. Florida's 825 miles of sandy coast is an attractive asset, with an estimated 80% of residents living within 10 miles of the coast and 35 million visitors coming to the State each year.

Hurricanes also are a fact of life in Florida. Florida has the greatest probability of any state in the nation to experience the landfall of a major – Category 3 or higher – hurricane. During the past two years, Florida has experienced an unprecedented level of tropical storm activity. In 2004, Hurricanes Charley, Frances, Ivan and Jeanne impacted our State. Hurricanes Dennis, Katrina, Rita and Wilma came ashore in Florida in 2005. The total value of residential and commercial properties along Florida's coastline is fast approaching \$1 trillion, and property damage from hurricanes and coastal storms has been in the billions of dollars. The State continues to seek ways to mitigate future storm damage to its coastal resources.

On September 7, 2005, Governor Jeb Bush issued Executive Order 05-178, creating the Coastal High Hazard Study Committee (Committee). The Committee is charged with studying and formulating recommendations for managing growth in Coastal High Hazard Areas (CHHA), which are defined as the Category 1 hurricane evacuation zones. The 19-member Committee includes State Senator Charlie Clary and State Representative Holly Benson; the

Secretaries of the Florida Departments of Community Affairs, Environmental Protection, Health and Transportation; the Executive Director of the Florida Fish and Wildlife Conservation Commission; the Director of the Division of Emergency Management; the Commissioner of the Office of Insurance Regulation, and the Director of the Office of Tourism, Trade and Economic Development. In addition, the Committee has members representing the Florida Building Commission; the Florida League of Cities; the Florida Association of Counties; the Florida Shore and Beach Preservation Association; the insurance industry; an environmental advocacy entity; property owners; and home builders.

The Committee conducted meetings around the State: St. Petersburg (November 15-16, 2005), Ft. Lauderdale (December 12-13, 2005), Ft. Myers (January 5-6, 2006), Pensacola (January 19-20, 2006), and Tallahassee (January 27, 2006). The Committee served as a forum for identifying and recommending land use policies that safeguard the public from natural hazards, protect property rights, preserve coastal ecosystems and enhance economic development and tourism opportunities. Presentations were received from local, regional, state, and national experts in the areas of emergency management; public infrastructure; insurance; building design, construction, safety; and the environment. In addition, the Committee received public comment both at its meetings and in writing.

Tropical Events and Florida's Coast

A hurricane is an intense tropical cyclone, which generally forms in the tropics and is accompanied by thunderstorms and (in the northern Hemisphere) a counterclockwise circulation of winds. Tropical cyclones are classified based on their intensity as follows:

- **Tropical Depression:** An organized system of clouds and thunderstorms with a defined surface circulation and maximum sustained winds of 38 miles per hour (mph) or less. Sustained winds are defined as a 1-minute average wind measured at about 33 feet (10 meters) above the surface.
- **Tropical Storm:** An organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39-73 mph.
- **Hurricane:** An intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph or higher. Using the Saffir-Simpson scale, hurricanes are further classified as follows:
 - **Category 1:** sustained winds between 74 and 95 mph;
 - **Category 2:** sustained winds between 96 and 110 mph;
 - **Category 3:** sustained winds between 111 and 130 mph;
 - **Category 4:** sustained winds between 131 and 155 mph; and
 - **Category 5:** sustained winds over 155 mph.

In addition to high winds, hurricanes can produce inland flooding, which accounts for more than half of reported deaths; tornadoes; and storm surge. Storm surge is a rise in water level that is pushed toward the shore by the force of the winds generated by the storm. Water level also rises due to reduced atmospheric pressure. This advancing surge combines with

the normal tides to create the hurricane storm tide, which can increase the mean water level 15 feet or more.

As noted previously, Florida has an extensive coastline and is susceptible to tropical cyclones. Tropical cyclones pose a risk to development, people and property. Recognizing this vulnerability, the State of Florida has consistently worked to meet this challenge. Florida has an integrated and inter-dependent emergency management system, featuring preparedness, response, recovery and mitigation. This system earned Florida the distinction of being the first nationally accredited state emergency management program.

Another key component of Florida's efforts to protect its coast is its growth management system. Since 1985's growth management legislation, all counties and municipalities must adopt a comprehensive plan that is in compliance with the requirements of Chapter 163, Florida Statutes (F.S.), and the minimum criteria of Rule 9J-5, Florida Administrative Code (F.A.C.). These plans must obtain State approval by the Department of Community Affairs (DCA). Comprehensive plans are required to contain elements that address future land use, housing, transportation, public facilities and services, conservation, recreation and open space, intergovernmental coordination, and capital improvements. Coastal communities (35 counties and 160 municipalities) are required to prepare a separate coastal management element (Rule 9J-5.012, F.A.C.). While Florida's growth management legislation has been refined since its initial adoption in 1985, the Coastal Management Element (along with the related elements in each local government's comprehensive plan) remains the primary local government tool for guiding coastal development. This occurs within a framework of other State laws and regulations, some of which also influence development of private land and the development of public infrastructure within hazardous coastal areas.



Another State law affecting coastal development is Chapter 161, F.S., Part I of which is administered by the Bureau of Beaches and Coastal Systems in the Department of Environmental Protection (DEP), and addresses the planning, management and regulation of activities along the sandy beaches fronting the Atlantic Ocean, Gulf of Mexico and Straits of Florida. Part II of Chapter 161, F.S., authorizes coastal

counties to act as local beach and shore preservation authorities, establish taxing districts and otherwise coordinate activities necessary to further protection of the beach and coastal system. Part III primarily establishes a structure for more protective local requirements in building or zoning codes, requires disclosure upon sale of property seaward of the Coastal Construction Control Line (CCCL), and provides for



local control of vehicle traffic on the beach. The DEP, through the Office of Coastal and Aquatic Managed Areas, also has administrative responsibility for the Florida Oceans and Coastal Council, established by Part IV of Chapter 161, F.S.

The CCCL represents the shoreline area subject to severe fluctuations attributable to a 100-year return interval storm event. The Beaches and Shores Resource Center at Florida State University was contracted to re-establish the lines using a storm tide model developed at the University of Florida by Dr. T.Y. Chiu and Dr. Robert Dean. All 25 coastal counties with sandy beaches had the CCCL reestablished by DEP rule between 1981 and 2001.

The Committee represents one more tool in Florida's progressive efforts to protect and manage its coastal resources. During its deliberations, the Committee determined there are opportunities to augment and enhance Florida's current policy framework and implementation. The following is an overview of the specific issues and challenges identified by the Committee followed by recommendations for potential solutions and policy considerations.

Recommendations and Policy Considerations

The discussion provided below presents the Committee's recommendations and policy considerations in two sections. Section I recommendations focus on improvements to technical resources through consistent modeling and high quality data sets needed to supply greater scientific certainty in delineating areas impacted by major coastal weather events and how that information defines the hurricane evacuation area, including the CHHA, and impacts programs within the CHHA. Improvements to technical resources and clear definitions will establish the framework to accurately assess in part the utility of the policy considerations in Section II. The Committee proposes to the Governor and Legislature that any legislative changes necessary to implement Section I recommendations be commenced this 2006 Legislative Session and implemented within State fiscal year 2006-2007.

Due to a need for improvements to technical resources and sheer complexity of the issues, several of the policy considerations in Section II will require significant analysis and refinement. Therefore, the Committee proposes to the Governor and Legislature that the policy considerations in Section II are concepts worthy of further exploration.

SECTION 1- RECOMMENDATIONS FOR 2006 LEGISLATIVE SESSION ACTION

Recommended Improvements to Technical Resources

Issue 1: A consistent methodology for modeling the impacts of hurricanes on coastal communities has not been established.

Explanation: At present, the hurricane evacuation zones depicted in the regional Hurricane Evacuation Studies (HES) are based on storm surge boundaries partly defined through use of the Sea Lake and Overland Surges from Hurricanes (SLOSH) model developed by the National Hurricane Center. While there are other models in use, it appears that SLOSH is the most commonly used model and at the present time best serves the State's needs. In order to establish a uniform standard throughout the State, the Division of Emergency Management (DEM) recommends use of the same storm surge model that the National Hurricane Center uses for determining storm surge vulnerability. Consistent modeling requires standardized data collection and the model results are dependent on the data supplied. The use of LIDAR (Light Detection and Ranging) as a data collection methodology would provide the SLOSH model with high

quality intense data sets that could serve multiple modeling purposes. Implementation of the SLOSH model with improved data will provide a more accurate depiction of the areas actually subject to surge and the extent of potential flooding.

LIDAR is a much more accurate method of determining the elevations of land and near shore coastal features. The data is gathered via plane flying over an area with a laser which sends and receives the laser from the plane. LIDAR surveys can provide much greater accuracy than conventional survey methods. GPS is used to further define the location of the aircraft and thus the point at which the elevation measurement is taken. The current SLOSH model grids are based upon older data with less accuracy. LIDAR data can improve the base elevation data in the SLOSH and therefore provide more accurate SLOSH model outputs.

Recommendation: In order to establish a uniform standard in Florida, use the storm surge modeling tool that the National Hurricane Center (NHC) uses for determining storm surge vulnerability and base this data on the most accurate





resolution for digital elevation mapping. The current tool is the SLOSH model. In the event that the NHC changes tools, the DEM should update to remain consistent with the NHC.

Issue 2: The HESs currently date from 1994 through 2004, and are updated on a rotating basis. Typically, the studies are contracted for by DEM and are performed by a variety of contractors including Regional Planning Councils (RPCs) and private consultants. This does not always provide for adequate coordination among regional studies to assess the impacts of storm events requiring multi-regional evacuation. It also does not provide for a regular schedule of updates, a consistent methodology, and a designated responsible entity.



Coastal High Hazard Area for southwest Florida.

Explanation: The HESs provide technical and demographic data for counties and regions so that evacuation characteristics can be better understood. In addition to defining the Category 1 through 5 evacuation zones, the studies provide local jurisdictions with an analysis of the evacuation roadway network and identify critical links in the evacuation process that should be addressed before an evacuation commences. Because Florida's coastline is continually changing due to the impacts of hurricanes and other factors, updating the models on a regular basis would provide for more meaningful and accurate data upon which to base evacuation zones and mitigation efforts.

Recommendation: Amend pertinent Statutes to designate the DEM as the responsible entity for managing the updates of the regional HESs.

Require periodic updates to all regional HESs. DEM will be responsible for establishing an appropriate methodology for the HESs.

Issue 3: Some of the HESs do not specifically define each evacuation zone by hurricane category but combine evacuation zones for multiple hurricane categories. Combining evacuation zones does not provide precise information for emergency response or planning purposes.

Explanation: There is no technical reason why each evacuation zone cannot be explicitly mapped. For emergency management, it would be preferable to do so. Furthermore, the additional clarity gained by showing each evacuation zone enhances information available to decision makers, including public policy makers, the development community, and property owners. In addition,

the Committee discussed the concept of adopting the CHHA (which is currently defined as the Category 1 evacuation zone) by Rule. Due to the implications of this designation on property ownership, this consideration was deferred to Section II, Policy Considerations.

Recommendation: Require all five of the hurricane evacuation zones to be explicitly mapped within HESs instead of combining some zones.

Property Owner Notification

Issue 4: Ensure that individuals acquiring property in the hurricane evacuation zones are aware of the implications of owning property within these zones.

Explanation: The Committee concurred on the need to provide notice to buyers of property within

hurricane evacuation zones. This notice would allow potential property owners to understand the fact that evacuation of these properties may be required during certain storm events. Notice is particularly important given the influx of populations that are not familiar with Florida's evacuation requirements. It is consistent with disclosures under the CCCL program and provides for enhanced consumer protection. Since evacuation zones may change over time with changes to the coastal conditions, the notice will need to recognize this fact. Changes in real estate transaction laws (which are outside of DCA's statutory authority) may be appropriate to provide notice to buyers. In addition, public outreach and education should be accomplished through a variety of means.

Recommendation: Amend pertinent Statutes and Rules to require that documentation be provided to disclose a property's location in an evacuation zone (and specifying which zone) as part of real estate transactions. Direct the relevant agencies to develop programs and materials for public outreach and education.

Programs within the CHHA

Issue 5: Models Utilized to Establish CCCLs

Explanation: Structures sited seaward of the CCCL must comply with stricter standards contained within the Florida Building Code in order to protect life and property. All proposed construction and excavation seaward of the CCCL must also be reviewed and permitted by the DEP. The permitting review addresses proper design and siting in order to protect the beach and dune system, native salt resistant vegetation and marine turtles.

The location of the CCCL line is established by using analytical/numerical models to simulate





Issue 6: Effectiveness of Established CCCLs

Explanation: CCCLs are subject to review at the discretion of the DEP, or at the written request of officials of affected counties or municipalities, after consideration of hydrographic and topographic data that indicate shoreline changes have rendered established control lines to be ineffective for the purposes of State law (Section 161.053, F. S.).

storm tide inundation and dune erosion for the 100-year return interval storm event. The technical/scientific studies used for CCCL establishment (and reestablishment) were developed for the Department through joint research efforts by the Beaches and Shores Resource Center (BSRC) and the University of Florida's Coastal and Oceanographic Engineering Department.

There is a need at this time to evaluate data and information collected from the recent storms to update the models used to establish CCCLs. It is also important that the storm tide and dune erosion models applied are consistent with current, state-of-the-art technology.

In July 2005, the Department tasked BSRC to begin this work by developing, testing and evaluating dune erosion models for use in coastal permitting as well as future CCCL reestablishment.

Recommendation: By October 1, 2006, DEP should update numerical models used to establish CCCLs. Support legislative funding at appropriate levels to complete this work.

Preliminary evaluation indicates the established CCCL no longer defines the impact of the 100-year return interval storm event in multiple areas of the panhandle, including Gulf County (most notably the St. Joe Peninsula), Santa Rosa, Escambia, Franklin, Okaloosa and Walton Counties. Both the technical work required to evaluate the CCCL and the rulemaking process to reestablish a new line is time and workload intensive. Because of this, the DEP has proposed conducting the restudy of the CCCL for Gulf County and Santa Rosa County during FY 2006/2007, and Escambia, Franklin, Okaloosa and Walton Counties during the two subsequent fiscal years.

Anticipated budget requirements to conduct the recommended restudy efforts are dependent upon the relative shoreline length; for the two areas listed above to be tasked in FY 2006/2007, the Department would need an appropriation of \$160,000 for hydrographic data collection and controlled aerial photography.

Recommendation: Restudy the CCCLs along identified portions of the Florida Panhandle,

and reestablish the line(s) as necessary through rulemaking in order to protect life, property, and the beach and dune system. Support legislative funding needed to accomplish this work in a timely manner. In order to minimize the potential for inappropriate coastal construction before the CCCL line(s) can be reestablished, the DEP should, by May 1, 2006:

- Review and reprioritize, if necessary, the order in which the CCCLs for the subject counties are reviewed. The priority should be based on the degree of anticipated change of location of the line and the degree of development potential within the area that may be added seaward of a reestablished line.
- Evaluate methods for accelerating the review and reestablishment of the CCCLs.

Issue 7: Lack of setbacks within the CCCL Regulatory Program

Explanation: All coastal states with developable beach/dune systems have some form of state-mandated regulatory mechanism by which they prohibit or restrict new development in designated portions of the shoreline. The strength of the setback or coastal construction control laws depend on the setback distance and the exceptions allowed. Setback laws have a dual purpose: reducing the loss of life and property from storms, and protecting the natural beach and dune system, which serves as a storm buffer.

Under the CCCL program, major development seaward of a predicted 30-year erosion projection (setback line) is prohibited. Subsection





161.053(6), F.S., stipulates, "...the Department {of Environmental Protection}... shall not issue any permit for any structure, other than a coastal or shore protection structure, minor structure, or pier ... which is proposed for a location which, based on the Department's projections of erosion in the area, will be seaward of the seasonal high-water line within 30 years after the date of application for such permit."

Some exemptions exist from this setback requirement. Most notably, a statutory exemption exists for the construction of single-family dwellings where the parcel for the proposed dwelling was platted before October 1, 1985; the owner of the parcel for the proposed dwelling does not own another parcel immediately adjacent to and landward of the parcel for which the dwelling is proposed; the dwelling is located landward of the frontal dune structure; and the dwelling will

be as far landward on its parcel as is practicable without being located seaward of or on the frontal dune. In practice, this exemption frequently results in single-family dwellings being sited immediately landward of the frontal dune. Such siting often results in excavation of the landward portion of the natural dune system which can destabilize the dune feature, potentially causing more damage to property during storm events than would otherwise occur had the dune system not been impacted.

Dune impacts are not limited to activities on private property. In five Florida counties, municipalities interrupt dune formation by maintenance of vehicular access ramps. The ramps can allow water penetration and erosion of the dune structure from behind, exacerbating erosion during a storm event.

In addition, structures destroyed by a storm are also generally allowed to be reconstructed in their pre-existing footprint (Section 161.053(13), F.S.), even when the rebuilt structure will be located seaward of the 30-yr. erosion projection.

Strengthening the setbacks within the CCCL permitting program may result in economic impacts, both by restricting a property owners' ability to construct on a parcel and to the State through potential increased taking claims.

Recommendation: By May 1, 2006, DEP should develop a scope of work to reevaluate setbacks and other dune protection criteria within the CCCL regulatory program in order to provide greater protection to life, property and the beach dune system, including an economic impact analysis of potential changes. This re-evaluation should include consideration and an analysis of the benefits and drawbacks of: revising the setback criteria to include the frontal dune feature or the 30-yr. erosion projection, whichever is the most landward; changes to the current exemptions from the setback and dune protection criteria; and, revisions to the rebuilding policy.

Issue 8: Post-Storm Emergency Coastal Armoring

Explanation: Section 161.085, F.S., empowers local governments to authorize installation of temporary rigid coastal armoring structures for protection of private structures or public infrastructure following erosion impacts attributable to a storm event. The intent of the statute is that these installations be constructed in a timely manner, in accordance with proper siting and design criteria, while at the same time preserving public beach access, and offering protection to the beach-dune system, native coastal vegetation and nesting marine turtles and turtle hatchlings. This provision of the statute further stipulates that such structures installed be deemed temporary, with strict



guidance on removal of the structure or application to the Department for permanency within 60 days following completion of the installation.

While the intent of the current law should be maintained, it may be sufficiently vague to provide local governments too much scope when issuing temporary permits. The criteria to be considered by local governments when issuing these temporary permits is general in nature and include:

- (a) Protection of the beach-dune system;
- (b) Siting and design criteria for the protective structure;
- (c) Impacts on adjacent properties;
- (d) Preservation of public beach access; and
- (e) Protection of native coastal vegetation and nesting marine turtles and their hatchlings.



These criteria vary significantly in their application based on the site specific conditions at each project area and require adequate expertise in ecological and coastal engineering disciplines to reasonably ensure they are met. Unfortunately, not all local governments retain staff with this experience, and permits are often issued that result in harm to the beach and dune system, adjacent properties, or to nesting marine turtles and their hatchlings.



To ensure that emergency armoring does not result in these negative impacts, there should be additional and specific guidance that provides siting and design criteria as well as statutory revisions that create incentives for local governments to follow the statutory criteria when issuing permits for emergency coastal armoring. To help reduce the need for emergency armoring, the DEP should continue to study a wide range of technologies, including beach restoration, structures, and native vegetation, and provide public information on best management practices that may be useful in providing protection to structures and dunes while also protecting the beach/dune system, native vegetation and marine turtles.

Recommendation: To help prevent damage to the beach and dune system, adjacent property owners, and marine turtles from inappropriate coastal armoring following storm events:

- By June 1, 2006, the DEP should develop interim guidance for temporary coastal armoring. By March 1, 2007, DEP should develop specific siting and design criteria for temporary coastal armoring that clarify the existing statutory criteria.

- Legislative changes should be pursued that encourage compliance with statutory requirements for issuing emergency coastal armoring permits by providing that only local governments who follow the statutory provisions may retain authority to issue emergency armoring permits.
- DEP, in consultation with the Florida Fish and Wildlife Conservation Commission (FWCC), should continue to examine the methods and technology for protecting structures and building and/or stabilizing dunes, and educate property owners about the best management practices to enhance and protect their property.

Issue 9: Consistency between DOH onsite system and DEP permitting standards

Explanation: The Department of Health (DOH) has no statute or rule language that specifically addresses the CHHA or the CCCL. Section 381.0065 F.S., requires a 75 foot setback from

onsite systems to the mean high-water line of tidally influenced surface waters. This section further references the establishment of the mean high-water line by the DEP's statute (see Section 177.25(15), F.S.). Lots and subdivisions recorded before 1972 are grandfathered by Section 381.0065, F.S., and only require a 50-foot setback. The mean high-water line is determined by elevation and is impacted by beach erosion.

By law (Section 381.0065, F.S.) no building or plumbing permit for any building requiring the use of an onsite system may be issued until the department has issued a construction permit for the onsite system. As such, obtaining an onsite system construction permit is generally the first step in the building/development process. Section 381.0065(4), F.S., also states the department "shall not make the issuance of such permits contingent upon prior approval by the Department of Environmental Protection." Because

the DOH has no authority to enforce the DEP's statutes or rules in regard to location of facilities in the Coastal Zone, and has no specific authority of its own in this regard, systems are often permitted seaward of the structure where they are most vulnerable to damage from storm surges. Placement in compliance with DEP rules is encouraged but cannot be enforced by the DOH.

In addition to disrupting service to the owner, damaged systems are a sanitary nuisance and an economic impact to the owner, local government (clean-up) and tourism.

Recommendation: Amend statutory provisions in Section 381.0065(4), F.S., to allow coordination between DOH and DEP on permitting issues. Require DEP permitting prior to DOH permitting.



SECTION II- POLICY CONSIDERATIONS REQUIRING FURTHER EVALUATION AND ASSESSMENT BASED ON SECTION I RESULTS

Many concepts discussed by the Committee warrant further analysis and have the potential to become valuable planning tools to assist the State in protecting life, minimizing property damage, and enhancing protection of the beach dune system. While appropriate review and analysis will surpass the timeframe of the Committee, hopefully, these concepts can assist in mapping out a course of action for future administrations seeking innovative legislative remedies to Florida's unique growth challenges. Recognizing that implementation of these concepts could affect a wide array of stakeholders, including property owners, local governments and State advocacy groups, the Committee requested their involvement in any further discussion and development of these concepts.

Seeking to better define the CHHA the Committee considered whether the CHHA should be defined as the area no smaller than the Category 1 storm surge Maximum of Maximums area rather than the Category 1 evacuation area. The term "Maximum of Maximums" is defined as the Maximum of the ME-

OWs (maximum envelope of water), which combines all the MEOWs of a particular hurricane category. It is considered to be the worst case scenario of storm surge possible. The Maximum of Maximums represents the maximum surge expected to occur at any given location, regardless of the storm track or direction of the hurricane. The only variable is the intensity of the hurricane represented by category strength (1-5).

Statute currently designates the Category 1 evacuation zone as the CHHA. Rule provisions then require that population concentrations be directed away from the CHHA and that public expenditures for infrastructure be limited in this area. The current practice in preparing evacuation maps is to confer with county emergency management officials to modify the boundaries of the storm surge zones to define evacuation zone boundaries that are more easily understood by the public. Typically this is done by extending the surge zone boundaries further landward to the nearest street or highway. With a more accurate delineation of the storm surge boundary, made possible through technology such as LIDAR





and with the enhanced mapping described in this report, this policy consideration could allow for a separation of evacuation implementation versus planning applications of storm surge modeling. Separating these important functions could provide for a more accurate and equitable application of the various planning requirements that apply to the CHHA. Furthermore, in order to ensure that the delineation



of the CHHA is recognized within the larger context of the local government's comprehensive plan, the CHHA should be depicted on the local Future Land Use Map (FLUM). There was also discussion of adopting the CHHA but not the evacuation zones by Rule.

Review of enhanced mapping capabilities led to a discussion of the State examining the feasibility and advisability of establishing more accurate state-wide flood maps, using LIDAR and other available technologies. This approach, already used in North Carolina, might provide for a more accurate assessment of vulnerability than the FEMA's current mapping. These maps are in the process of being updated but the speed of this process is dependent on funding. It is necessary to ensure coordination of the meth-

odology with the DEP and the Water Management Districts to ensure a consistent Statewide product.

Many of the Committee's deliberations centered on life safety issues and how to address challenges with respect to evacuation times. Currently, there exists no hurricane evacuation clearance time standard to guide regional evacuation planning efforts or State and local consideration of density increases in the HVZ. The DEM reports that 12 hours or less (one full daylight cycle) should be the target goal for hurricane evacuation. However, there is currently no hurricane evacuation clearance time standard in statute or rule against which land use changes and development in the hurricane vulnerability zone (not just the CHHA) could be measured. A limited number of communities establish hurricane evacuation clearance time standards in their plans. When no evacuation time has been established, the DCA has

taken the position that the statutes and rules allow no significant increase in evacuation time as a result of increases in density in the CHHA. The DEM reports that the majority of Florida communities have evacuation times greater than 12 hours. If a target time were established, it could be a consideration in determining whether additional densities could be approved for a particular community. The Committee recognized that there are a number of policy implications in the application of clearance time standards and these implications must be fully explored with affected communities.

Hurricane evacuation by its very nature is a regional issue. Currently, there is some level of regional coordination on these issues, but many members of the Committee felt efforts should be enhanced. In



some cases, the evacuation of a region will be affected by simultaneous evacuation of other regions that are using the same evacuation routes. For this reason, Committee discussions explored the desirability of requiring regional evacuation models to factor in the traffic generated by other regions, where this traffic would use the same evacuation routes. In order to better coordinate these efforts the Committee considered using the RPCs to maintain a computerized regional hurricane evacuation model for several reasons: (1) First, maintaining such a model is complicated and may be beyond the capability of smaller local governments; (2) Maintaining such a model would require that data regarding future land use plans and approved development orders be collected from all of

the local governments in the region; (3) Maintaining the model at the RPC level would ensure that its use is consistently and fairly applied throughout the region; and (4) Maintaining the model at the RPC level would help ensure that land use plans and approved development in other jurisdictions are taken into consideration, when hurricane evacuation and shelter impacts are evaluated.

Continuing its concentration on life safety issues the Committee made note of the potential to encourage the siting and relocation of unique land uses such as hospitals and nursing homes outside of the CHHA. Current State regulations governing land use in CHHAs focus on residential uses and do



not provide guidance for the location of other types of uses that might be particularly impacted by being located in CHHAs. Nursing homes, hospitals, and similar uses serve populations which by definition have unique needs which create significant logistical challenges to achieving a safe and timely evacuation of their clientele. There are also public uses which provide essential services to the population and must remain in operation after hurricane events. Location of these uses in the CHHA may increase the disruption of community services. These could include public facilities such as administration buildings, court houses, and water and sewer treatment plants.



While the Committee recognized the challenges of dealing with the concentration of any population, not just those with special needs, it also recognized a need for local governments to attain flexibility to allow for increases in density where the impacts of such increases on hurricane evacuation clearance times, shelter space, environmental resources, and other appropriate considerations can be mitigated. A variety of mitigation options should be available, including additional shelter space, improved infrastructure, and sheltering in place. Sheltering in place may be an option for consideration depending upon the category of a storm, the distance the building is located from the CHHA, and the building code standard to which the structure was built. Under the proper circumstances, sheltering in place provides adequate safety while also reducing demand on critical evacuation routes which are needed by residents who live either within or closer to the CHHA.

Local governments need the ability to pursue density increases where necessary to accomplish urban infill and redevelopment, fiscal health and economic development, and to protect community character.

The Florida Statutes do not directly speak to density levels in the CHHA. There are provisions to direct the avoidance of public expenditures for transportation improvements which encourage or subsidize increased development in the CHHA, but no reference is made to private expenditures. However, under Rule 9J-5.012(3)(b)(6), F.A.C., DCA has required Local Coastal Management Elements to direct population concentrations away from known or predicted coastal high hazard areas. DCA takes this requirement into consideration when reviewing development applications in the CHHA that require Comprehensive Plan amendments. In the absence of locally adopted density limits, DCA conducts a case by case review of Comprehensive Plan amendments without any defined numeric limit. Rule modifications and additional planning tools could aid in DCA's review when it considers the amount of the density increase. These tools could help mitigate for or could reduce the possible impacts on life safety and property damage through a variety of criteria.

One possible tool for allowing such flexibility could be a "Coastal Lands Stewardship" program, modeled after the Rural Land Stewardship program. This program could allow density increases in exchange for the protection of coastal environmental resources provided that development incorporates

other important standards such as meeting evacuation clearance times, shelter space standards, and other criteria. Similar criteria could apply to a more generally applicable performance standards approach which might be more suitable in urbanized areas. The Committee envisioned such approaches being enabled through statutory changes. Local plans could then be amended to incorporate appropriate policies and criteria for density increases consistent with the new criteria and programs provided for in statute.

In attempting to address some of the most egregious properties, the Committee considered the more traditional tool of acquisition. Coastal lands are expensive and it is not feasible to use acquisition as the primary means for restricting development in the CHHA. Nevertheless, certain properties may warrant fee simple or easement acquisition. A dedicated funding source, which requires a statutory amendment, would allow for public acquisition of lands. Additional study is, however, required to fully explore the details of such a program. For example, in view of the high cost of coastal land, it would be critical to coordinate the program with other initiatives, such as transfer of development rights initiatives, repetitive loss mitigation programs, and other State incentive programs.

Currently, the Department does not review small scale amendments that increase densities in the CHHA. Substantial increases in density may occur incrementally through the small scale process. It may be beneficial to have DCA review small-scale amendments that result in increases in density in the CHHA, unless the local government has amended its comprehensive plan to include some of the previously discussed mitigating policies.

Intricately tied to the life safety discussion is the ability to minimize damage to property. While analyzing practices around the State, the Committee noted a conflict between DCA rule and State fiscal policy. Traditional interpretations of DCA's rules discourage development in CHHAs; however, the State's fiscal policy does not support this direction because it provides the same State match for post-disaster assistance in the CHHA as in less vulnerable areas. The Committee discussed requiring local governments in the CHHA to pay a greater share of the cost of recovery from storms as a disincentive to per-



mit development in the CHHA. This principle could be applied by the State paying progressively smaller portions of its historical match within the CHHA after local infrastructure is destroyed by separate storm events. Some Committee members believed that if State funding were reduced, State revenues from the area should also be reduced.

The degree to which the State has a role in paying for recovery costs depends upon which of two constructs it applies in its approach to coastal areas. If the State continues to pay for redevelopment of coastal infrastructure, then it must approach coastal areas through a strictly regulatory construct. In



other words, the State's interest in life safety and minimizing the taxpayer burden would be achieved by regulating the type, siting, and density of new development. On the other hand, the State could also approach development through a less regulatory and more market-based construct. In that case, more flexibility would be extended to local governments to allow redevelopment of coastal communities. In the event of a disaster, however, the cost of replacing public infrastructure and paying for other clean up costs would be addressed by local governments assuming a greater or full cost.



Implementation of the above policy consideration must recognize that some facilities (such as State scenic highways in coastal areas and other publicly owned facilities that provide access to the waterfront) serve important public purposes, such as tourism and economic development. Consideration would also need to be given to grandfathering in or gradual implementation of these changes for existing public infrastructure. The Committee recognized that there would clearly be a need to involve local governments in an assessment and full discussion of the implications of any such changes in fiscal policy.

To avoid costly redevelopment expenses, new development within the CHHA could consider utilizing increased density mitigating options. Such options could be established to reduce risk to life and property by basing requirements on more severe storms (storms characterized by longer return intervals) than required by current policies (100 year storms). Such requirements would result in buildings built to withstand the hazards of stronger storm surges, more severe flooding, and higher winds. Special consideration should also be given to the corrosive effects of the coastal environment on

construction materials and to the enhanced effects of winds near open water on buildings, including greater wind forces and the risks related to wind-borne debris. Buildings within the CHHA are on the front line and take the strongest water and wind effects of hurricanes as they move onshore and continue across land. Higher standards will reduce damage costs and speed recovery while providing for more adequate shelter in the more frequent storms.

Additional thought was given to the protection of septic systems in the Big Bend portion of the State and other areas where there are no sandy beaches or CCCL. The Committee expressed interest in DCA, DEP, and DOH combining efforts to formulate a solution to safeguard such infrastructure and prevent impacts on adjacent coastal water quality.

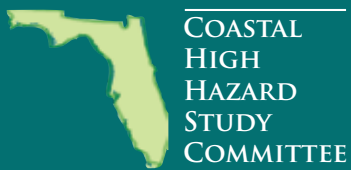
In an effort to protect the coastal environment and public safety, the Committee explored the possibility of conducting a study to assess the impacts and benefits of restricting vehicular traffic on coastal beaches, except where necessary for cleanup, repair, public safety, or State or Federal-permitted wildlife conservation. The study should consider the doctrines of customary use, dedication, and prescriptive easements, as well as relevant case law.

Under current law and pursuant to several of the recommendations contained in this report, there are provisions affecting development of property in coastal areas. The Committee discussed whether individuals acquiring property in the CHHA should be made aware that these provisions apply to and may affect use of the property. Changes in real estate transaction laws may be appropriate to provide notice to buyers of regulations and laws that pertain to property within the CHHA. Public outreach and education should be accomplished through a variety of means.

All the different planning and implementation tools explored by the Committee help to frame a larger policy question facing the State. Is there a

need to set State evacuation standards and performance criteria for new development within the CHHA to better protect life and minimize property damage?

One thing all the members of the Committee could agree on is that while Floridians must constantly strive to improve their coastal policies, few states could have performed better than Florida during the most recent hurricane seasons. The strength of Florida's building code, the detail given not only to emergency response, but also emergency preparedness, and the emphasis on sound coastal planning are a testament to the foresight and dedication of Florida's Governor, Legislature, and citizenry.



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