

COASTAL MANAGEMENT ELEMENT

Introduction

The purpose of the Coastal Management Element is to protect coastal resources, to protect human lives and property from natural disasters, to improve public access to beaches and shores, to maintain or increase the amount of shoreline devoted to water-dependent or water-related uses, and to preserve historical and archaeological sites within the coastal area. The Coastal Management Element addresses a dynamic natural and manmade system in which appropriate planning is paramount to maintaining the quality of life that residents and visitors enjoy in Miami-Dade County.

The Coastal Management Element reflects the uniqueness of the coastal area of Miami-Dade County and the realities of planning for a highly developed barrier island chain and low-lying mainland, a complex metropolitan area of over 2.5 million residents and 12 million annual tourists that heavily use the urban park system, especially coastal parks and waterways. The County continues its stewardship of these coastal resources, with activities including water quality monitoring, coastal wetland restoration, and increasing public awareness of and access to these coastal areas. Furthermore, Miami-Dade County is the only County in the nation to possess within its boundaries two national parks, Biscayne National Park and Everglades National Park, as well as the heavily used Biscayne Bay Aquatic Preserve, which is urban Miami-Dade's signature amenity.

Miami-Dade County continues its tradition of strong pre- and post-hurricane planning, utilizing lessons learned from Hurricane Andrew and other natural disasters. The County's evacuation zones, labeled A, B, and C, are not storm category dependent. Each storm's dynamics are modeled to predict potential impacts based on the Sea, Lake and Overland Surge from Hurricanes (SLOSH) II computer model, developed by the National Hurricane Center, U.S. Army Corps of Engineers, the U.S. Geological Survey and the Federal Emergency Management Agency, in cooperation with state and local offices of emergency management. Orders for evacuations are based on the storm's track, projected storm surge potential impacts and consultation with knowledgeable agencies. These three evacuation zones - Zone A, Zone B, and Zone C - as delineated by the Miami-Dade County Office of Emergency Management (OEM) are presented for information purposes on Figure 1. In accordance with Chapter 163, Florida Statutes, coastal high hazard areas (CHHA) are areas that are seaward of the elevation of a category one storm surge line and is depicted in Figure 13 in the Land Use Element.

The Coastal Management Element *Adopted Components* include the overall Element goal, objectives and policies, and concludes with a monitoring program for the Element.

GOAL

PROVIDE FOR THE CONSERVATION, ENVIRONMENTALLY SOUND USE AND PROTECTION OF ALL NATURAL AND HISTORIC RESOURCES; LIMIT PUBLIC EXPENDITURES IN AREAS SUBJECT TO DESTRUCTION BY NATURAL DISASTERS; AND PROTECT HUMAN LIFE AND PROPERTY IN THE COASTAL AREA OF MIAMI-DADE COUNTY, FLORIDA.

Objective CM-1

Protect, conserve and enhance coastal wetlands and living marine resources in Miami-Dade County.

Policies

CM-1A. Mangrove wetlands in the following locations and mangrove wetlands within the "Environmental Protection" designation on the Adopted Land Use Plan (LUP) Map for Miami-Dade County shall be designated as "Mangrove Protection Areas":

- Publically owned mangrove wetlands within and adjacent to the Oleta River State Recreation Area
- Haulover Park
- Bird Key (privately owned)
- Near-shore islands and northwestern shoreline of Virginia Key
- The western shore of Key Biscayne
- Bear Cut Preserve
- The Cocoplum Mangrove Preserve
- Matheson Hammock Park
- R. Hardy Matheson Preserve
- Chapman Field Park
- The Deering Estate and Chicken Key
- Royal Harbor Yacht Club and Paradise Point south shoreline (privately owned)
- Mangrove and scrub mangroves within and adjacent to Biscayne National Park and Everglades National Park to the landward extent of the mangroves
- Mangrove and scrub mangroves within and adjacent to Card Sound, Manatee Bay, Florida Bay and Barnes Sound to the landward extent of the mangroves

In these areas no cutting, trimming, pruning or other alteration including dredging or filling of mangroves shall be permitted except for purposes of surveying or for projects that are: (1) necessary to prevent or eliminate a threat to public health, safety or welfare; (2) water dependent; (3) required for natural system restoration and enhancement; or (4) clearly in the public interest; and where no reasonable upland alternative exists. In such cases, the trimming or alteration shall be kept to the minimum, and done in a manner, which preserves the functions of the mangrove system, and does not reduce or adversely affect habitat used by endangered or threatened species.

- CM-1B. Natural surface water flow regimes into and through coastal wetland systems will be restored and maintained to the maximum extent possible.
- CM-1C. Where shoreline access is to be provided through mangroves or coastal marshes, elevated boardwalks, designed to minimize the impact to wetland vegetation, shall be utilized.
- CM-1D. Mangrove forest, coastal hammock or other natural vegetative communities which remain in urban areas shall be maintained, protected, and incorporated into landscaping plans where development or redevelopment is to occur, except for trimming authorized by exemption pursuant to Ch. 403, Florida Statutes. To promote revegetation of coastal band mangrove trees, pruning or alteration of propagule or seed bearing trees shall be conducted in such a manner to preserve as much of the seed source as possible. Limited removal and trimming of mangrove trees outside of Mangrove Protection Areas for the purpose of providing necessary maintenance and/or visual shoreline access may be permitted, pursuant to the provisions of Chapter 24 of the Code of Miami-Dade County, as may be amended from time to time, or qualify for an exemption pursuant to Ch. 403, Florida Statutes.
- CM-1E. Wherever a coastal wetland is degraded or destroyed, a wetland with an equal or greater amount of habitat value shall be created, enhanced or restored, maintained and monitored as required pursuant to Uniform Mitigation Assessment Methodology, Section 373.414(18), Florida Statutes. Created habitats and restored habitats shall be perpetually maintained free of invasive exotic vegetation. Habitats of endangered or threatened species shall not be degraded or destroyed.
- CM-1F. Replanting of mangroves and marsh grasses shall be used to enhance spoil islands, street ends, rights-of-way, parks, and other public or semi-public shorelines. Mangroves and marsh grasses should be planted in riprap planters except in extremely protected areas with very limited public access. DERM shall maintain guidelines for the construction of planters and the selection and placement of vegetative material.
- CM-1G. No further dredging or filling that would result in the destruction of grass/algal flats, hard bottom or other viable benthic communities shall be permitted in Dumfoundling Bay, Biscayne Bay, or Card Sound or Barnes Sound, or the tidal portions of their natural tributaries, except as provided for in Chapter 24 of the Code of Miami-Dade County, as may be amended from time to time.
- CM-1H. Long-term monitoring of water quality, benthic habitats, and living resources shall be undertaken to improve permitting processes and to guide future coastal restoration and enhancement activities.
- CM-1I. Artificial reefs will be constructed to enhance and create habitat for fish and benthic species within permitted artificial reef sites. Only appropriate materials for reef construction and in accordance with State guidelines and the County's artificial reef policies shall be used to create artificial reefs. In Dumfoundling Bay and Biscayne Bay north of Biscayne National Park artificial reef construction will occur in deep dredge holes and troughs, and that meet the following criteria:

- i) reef material can be placed in a manner that will not interfere with traditional boating or fishing uses, and will not be harmful to existing or adjoining marine environments;
- ii) they are areas that are prone to accumulate fine bottom sediment that is re-suspended by tidal flow, minor wind stress or boat agitation; and,
- iii) they are preferentially accessible to shoreline fishermen.

CM-1J. The County's Geographic Information Systems database shall be expanded to include information generated through the coastal permitting process to facilitate assessment of net gains and losses of coastal wetlands and benthic habitats and long-term cumulative impacts to the bays and tributaries in Miami-Dade County.

CM-1K. The preservation of estuarine nursery functions shall be taken into consideration in making decisions about canal discharge schedules. The County shall work with the U.S. Army Corps of Engineers, Biscayne National Park, and the South Florida Water Management District to better understand existing and historic surface and ground water flows to Biscayne Bay and their relationship to the Bay's critical estuarine nursery functions.

Objective CM-2

Protect, conserve or enhance beaches and dunes and offshore reef communities.

Policies

CM-2A. Where beach restoration or renourishment is necessary, the project shall be designed and managed to minimize damage to the offshore grass flats and dune vegetation.

CM-2B. Beaches shall be stabilized by planting, maintaining and monitoring appropriate dune vegetation, and by providing elevated footpaths or other means of traversing the dune without contributing to erosion. All subsequent activities or development actions on, or bordering the restored beach, shall be compatible with and contribute to beach maintenance.

CM-2C. To the greatest extent possible, areas that encompass offshore reefs, grass flats or benthic resources will not be impacted, and any permitted impacts to those habitats, inclusive of associated lost services, will be mitigated. Areas of offshore reefs, grass flats and/or benthic resources shall not be used as borrow areas for beach restoration or renourishment projects. Areas that may be used as borrow areas should contain appropriate sand quality and have sufficient distance from existing reef, grass flats or other benthic resources for the protection of those resources.

CM-2D. Artificial reef sites located in the offshore waters of Miami-Dade County shall continue to be utilized in natural resource management and for marine habitat creation. The placement of appropriate artificial reef materials, including ships, barges, steel structures, limestone boulders, large concrete structures and prefabricated calcium carbonate modules, shall be in accordance with State guidelines and the County's artificial reef policies.

- CM-2E. Miami-Dade County shall continue to monitor and protect the offshore reef tract in northern Miami-Dade County. As needed to protect the reef resources, Miami-Dade County shall seek designation of new, or modification of existing anchoring areas.
- CM-2F. Miami-Dade County shall protect its coastal area and shoreline from the establishment of invasive exotic pest plant species that degrade native coastal vegetation. The County Parks, Recreation and Open Spaces Department and the County's Division of Environmental Resources Management (DERM) shall continue exotic pest plant control planning and programs that include public involvement to restore parkland and other natural areas by removing invasive exotic plants and reseeded or replanting native species, when appropriate.
- CM-2G. Miami-Dade County DERM shall continue to monitor and document the effect of artificial reefs on fishery resources, the types of material best suited for use, and the impact of artificial reef users on the sites.
- CM-2H. Miami-Dade County shall take an active role in fishery management issues addressed by the Florida Fish and Wildlife Conservation Commission related to artificial reefs and gear types which can adversely impact artificial and natural reefs.

Objective CM-3

Miami-Dade County shall continue activities to maintain or improve water quality in coastal and estuarine water bodies.

Policies

- CM-3A. The County shall continue to evaluate the impacts of marina siting, design, operation and maintenance on water and sediment quality and marine habitats in order to refine marina permitting processes.
- CM-3B. The County shall seek funds to provide 24-hour enforcement of pollution control laws and for areas with problematic water quality on the Miami River, Little River Areas, Arch Creek, or in Verified Impaired Waters.
- CM-3C. Miami-Dade County shall continue to identify environmentally damaging stormwater outfalls in unincorporated Miami-Dade County or on county roads. Improvements to priority outfalls in the major canal basins throughout Miami-Dade County shall continue to be implemented.
- CM-3D. The County shall work with the Florida Department of Environmental Protection and the South Florida Water Management District in consultation with the National Park Service to pinpoint sources of environmental degradation, refine existing water quality standards, and develop new standards for sediments and their toxic components.
- CM-3E. Pursuant to the findings of the Florida Inland Navigation District (FIND) study on spoil disposal when completed, Miami-Dade County shall work with FIND to retain sufficient active spoil sites and seek to have any identified unneeded spoil sites redesignated. Miami-Dade County shall also continue to evaluate alternative spoil disposal methods.

- CM-3F. Any new cuts, or submerged or emergent spoil areas that are permitted, shall be located and designed not to cause water quality degradation and to ameliorate potential damage from tidal currents and wave scour. They shall be stabilized during the construction process.
- CM-3G. Unconsolidated submerged cuts and shorelines that are a persistent source of turbidity shall be identified. Consistent with available funding and approved technology, the County shall stabilize those areas so identified that are in public ownership through the use of riprap and the re-establishment of shoreline vegetation.
- CM-3H. The County shall continue to identify and monitor all businesses in the coastal area that generate 55 gallons or more of hazardous or industrial wastes per year to ensure compliance with Chapter 24 of the County Code.
- CM-3I. Miami-Dade County shall continue to ensure that residential marinas and docking facilities with more than ten boat slips and all commercial marinas, shipping terminals, boat yards and boat manufacturing facilities shall be monitored annually to comply with Best Management Practices for marine facilities and other pertinent provisions of Chapter 24 of the County Code.
- CM-3J. Miami-Dade County shall continue to require the proper maintenance and functioning of dockside pumpout facilities through the Marine Facilities Operating permit process.
- CM-3K. Miami-Dade County shall monitor the implementation of the Coast Guard's Memorandum Of Understanding on pollution response policies and protocols. Only if necessary will the County seek delegation of authority to regulate discharge of wastewater and bilge water to estuarine and coastal waters.
- CM-3L. Stormwater management techniques which emphasize retention and infiltration techniques, including injection wells; back-sloping and berming; and low maintenance, salt tolerant native landscaping shall be given preference for use in the Coastal Area.
- CM-3M. Bulkhead repair or construction shall include the placement of riprap except where placement would be a hazard to navigation or public safety, or would preclude continued public recreational uses. Alternatives to riprap, such as an area of wave-absorbing material built into a seawall, shall be evaluated for use in places where riprap is not practical or safe, and where boat wakes create hazards to navigation.
- CM-3N. Trash and litter pickup on the islands and along the shoreline of Biscayne Bay shall be done as needed.
- CM-3O. The County shall continue to inspect existing water-dependent facilities to ensure that they meet applicable water quality and other environmental standards.
- CM-3P. Miami-Dade County shall continue to assist the State of Florida in developing antidegradation targets to protect Outstanding Florida Waters and Outstanding National Resource Waters of Biscayne Bay.

Objective CM-4

Miami-Dade County shall continue to work in cooperation with other appropriate agencies to increase the acreage, restoration and enhancement of publically owned benthic, coastal wetland and coastal hammock habitat. Endangered and threatened animal species and coastal wildlife shall be protected and coastal habitats restored and managed to improve wildlife values.

Policies

- CM-4A. Areas that are used for nesting, feeding or congregation by endangered and threatened species shall be protected from alteration and human activities that would further imperil those species.
- CM-4B. Miami-Dade County shall seek to establish, or reestablish, in cooperation with appropriate agencies, wildlife corridors in appropriate coastal locations such as: the Oleta River; areas between Matheson Hammock and Turkey Point; in the South Dade Wetlands and Southern Glades Wildlife and Environmental Area; and within the boundaries of Everglades National Park and Biscayne National Park.
- CM-4C. Travel corridors used by endangered or threatened species shall be protected to the extent possible from alteration and human activities that would further imperil those species.
- CM-4D. Miami-Dade County shall seek funding and assist federal, state, and other appropriate private sector agencies and organizations to remove invasive plant and animal species along the coast of Miami-Dade County in connection with regional South Florida ecosystem restoration programs.
- CM-4E. To minimize conflict between boaters and the endangered West Indian Manatee, Miami-Dade County shall continue to implement recommendations contained in Section III. C., Land Development of the Miami-Dade Manatee Protection Plan, approved by the Board of County Commissioners on November 21, 1995.
- CM-4F. Planning and permitting of new or expanded marine facilities shall be consistent with the requirements of Section III. G, Land Development of the Miami-Dade County Manatee Protection Plan, approved by the Board of County Commissioners on November 21, 1995.
- CM-4G. Within areas that have been identified as essential manatee habitat, the number of powerboat slips in multi-family residential marinas shall be consistent with Section III.C, Land Development of the Miami-Dade County Manatee Protection Plan, approved by the Board of County Commissioners on November 21, 1995, and not exceed the number of approved residential units.
- CM-4H. Manatee protection measures shall be established for high speed boating activities.
- CM-4I. Miami-Dade County Parks, Recreation and Open Spaces Department shall continue to promote awareness of the value of native coastal wildlife and threats to their survival through conducting wildlife nature programs and special events.

CM-4J. Miami Dade County shall continue to restore its coastal habitat for the coastal wildlife and other protected species which may utilize these habitats.

Objective CM-5

Miami-Dade County shall increase the amount of shoreline devoted to water-dependent, water-related, and publicly accessible uses.

Policies

CM-5A. A wide range of public water-oriented opportunities shall be provided at the water's edge within the Coastal Area in Miami-Dade County. Through its Shoreline Development Review process, the County shall continue to afford greater visual and physical public access to the coastal bays and their tributaries.

CM-5B. The County shall place a high priority on maintaining existing water-dependent uses (i.e., uses which cannot exist or occur without association with coastal or estuarine water masses), and water-related uses by the public identifying appropriate, environmentally compatible new areas for such activities. Priority will be given in land planning by Miami-Dade County for water-dependent land uses along the shoreline.

CM-5C. Miami-Dade County shall continue to place a high priority on the acquisition of coastal lands for use as parks and preserves.

CM-5D. New developments, larger than single family or duplex residences within the County's Shoreline Development Review Boundary shall be water dependent, water related, or at a minimum should include environmentally compatible shoreline access facilities such as walkways, piers, and viewing areas with landscaping grouped or spaced for views of and from the water, as provided for in Chapter 33D of the Code of Miami-Dade County, as may be amended from time to time. The County will continue to evaluate the effectiveness of the Shoreline Development Review process and develop compliance and enforcement strategies, if necessary.

CM-5E. The use of causeways, road rights-of-way and canal easements at shorelines shall be expanded wherever possible and additional sites sought to provide public access for existing and proposed boating-related launch and storage facilities and other water-related activities.

CM-5F. The siting of public or private water dependent facilities shall be based on upland, shoreline and in-water characteristics, as well as submerged land ownership. At a minimum, the following general criteria shall be used to determine the appropriateness of sites within the Coastal Area for marina/water-dependent projects:

- i) Construction or subsequent operation of any proposed marina/ water-dependent project shall not destroy or degrade:
 - (a) Hammocks, pinelands, or salt marshes, or
 - (b) Mangrove Protection Areas, or
 - (c) Seagrass or hard bottom communities, or
 - (d) Habitats used by endangered or threatened species.

- ii) Where applicable, the proposed marina/water-dependent project site shall have:
 - (a) A minimum depth of 4 feet at mean low tide in the proposed marina basin and access channel, and direct access to the Intracoastal Waterway or to another dredged channel or area with a minimum of 6 feet at mean low tide, and
 - (b) Good landside accessibility.
- iii) The proposed marina/water-dependent facility shall be:
 - (a) Compatible with existing, surrounding land uses, and
 - (b) Of sufficient size to accommodate project and the required parking, and
 - (c) Consistent with the requirements of Miami-Dade County's Shoreline Development Review process, as specified in Chapter 33D of the Code of Miami-Dade County, as may be amended from time to time.
- iv) The proposed marina/water-dependent facility shall:
 - (a) Preserve or improve traditional public shoreline uses and public access to estuarine and coastal waters, and
 - (b) Preserve or enhance the quality of the estuarine and coastal waters, water circulation, tidal flushing and light penetration, and
 - (c) Preserve archaeological artifacts or zones and preserves or sensitively incorporate historic sites, and
 - (d) Provide a hurricane contingency plan.

Objective CM-6

Miami-Dade County shall preserve traditional shoreline uses and minimize user conflicts and impacts of man-made structures and activities on coastal resources.

Policies

- CM-6A. By 2017, Miami-Dade County shall seek funding to study protection of traditional public uses of the shoreline and water, user conflicts, and impacts of construction and activities on coastal resources, including potential solutions.
- CM-6B. The County shall work with the National Park Service, the Florida Department of Environmental Protection and other agencies to maintain traditional recreational uses of the shoreline, beaches, cuts and creeks by enforcing public safety measures and not allowing user conflicts to increase to a point that precludes or poses serious hazard or conflict with these traditional uses.
- CM-6C. The County shall encourage full enforcement of laws regulating the use of shrimp trawling nets near bridges.
- CM-6D. No filling, spoiling or placement of structures in or over coastal or estuarine waters shall be permitted to diminish water surface areas that have been traditionally and intensively used by the general public for activities such as fishing, swimming, and boating.

- CM-6E. Only those floating or fixed structures which are water dependent and are allowable under all State and local laws shall be permitted in, on, over or upon coastal or estuarine waters.
- CM-6F. No advertisements or signs except Florida Department of Environmental Protection, U.S. Department of the Interior or U.S. Coast Guard approved signs, shall be erected on, over, or upon estuarine or coastal waters.
- CM-6G. All applicable County development review processes, and in coordination with appropriate municipalities, shall require dumpsters, trash transfer stations, gas pumps for automobile fueling, parking lots and all unsightly non-water dependent or water related uses on uplands within the Coastal Area to be placed away from the shoreline, and buffered from view from the water.

Objective CM-7

Improve the public's awareness and appreciation of Miami-Dade County's coastal resources and water-dependent and water-related uses.

Policies

- CM-7A. Signage along major thoroughfares shall direct the public's attention to public shoreline parks with water-dependent or related facilities.
- CM-7B. Miami-Dade County Parks, Recreation and Open Spaces Department shall continue to offer interpretive programs and special events to promote understanding and appreciation of the County's coastal resources by residents and visitors.
- CM-7C. Miami-Dade County shall seek funds for permanent and mobile exhibits or interpretive signage on coastal resources and water-dependent and water-related uses that would enhance public appreciation and awareness of the County's coastal resources and water-oriented opportunities. Public outreach programs including environmental workshops, TV and radio programs and public service announcements should be continued.
- CM-7D. Miami-Dade County shall continue its public involvement in natural areas restoration including removing invasive exotic plant species, reseeding or replanting native vegetation, enhancing habitat, monitoring wildlife, and renourishing dunes in coastal County parks.
- CM-7E. Miami-Dade County shall establish ongoing anti-litter and shoreline cleanup programs in cooperation with municipalities and the private sector. Businesses and civic organizations shall be encouraged to adopt a park, island, or shoreline natural area and keep it clean.
- CM-7F. Miami-Dade County will encourage the Miami-Dade County School Board to continue and expand its existing environmental education programs so that all children in the public school system receive "hands on" exposure to coastal resources.
- CM-7G. To better document the values, and to promote appreciation of Miami-Dade County's natural resources by residents and tourists, the County shall seek to have a study

conducted to support and sustain tourism, marina, water-dependent and water-related uses and to quantify the economic, health, and recreational benefits the community derives from protecting coastal resources and their water-dependent and water-related uses.

Objective CM-8

The existing time period required to complete the evacuation of people from flood vulnerable Coastal Areas and mobile homes prior to the arrival of sustained tropical storm force winds shall be maintained or lowered. Shelter capacity within Miami-Dade County shall be increased as necessary to provide a safe haven for storm evacuees.

Policies

- CM-8A. Miami-Dade County shall annually review and update, if necessary, the hurricane evacuation procedure section of its Comprehensive Emergency Management Plan (CEMP) and maintain or enhance, as necessary, the resources and capabilities of the Miami-Dade Office of Emergency Management to provide effective implementation of the CEMP.
- CM-8B. Miami-Dade County shall request that State government better assist Miami-Dade County with funding emergency planning and operations, including future State funding for the preparation of hazard mitigation and post-disaster redevelopment plans. To reflect the larger scale and complexity of planning, preparation, response, and recovery within large counties, Miami-Dade County shall request the State to revise its current funding distribution formula for natural disaster planning and emergency operations from the present equal distribution of monies between the 67 Florida Counties to a proportionate distribution formula reflecting population.
- CM-8C. Miami-Dade County shall develop a public education program prior to the hurricane season to notify households and operators of hotels, motels or time-share condominiums in flood vulnerable Coastal Areas of their need to evacuate and seek safe shelter in the event of a hurricane. The public education program should also be utilized to disseminate emergency preparedness information. Emergency information shall be printed in the community interest section of the telephone book.
- CM-8D. Miami-Dade County shall encourage its residents to be better prepared and more self-reliant in the event of a hurricane, including planning ahead for early evacuation, sheltering with family or friends living outside evacuation areas, or enrolling in County programs such as the Emergency Evacuation Assistance Program, residential shuttering program, or public safety alert programs.
- CM-8E. Miami-Dade County shall establish and maintain mutual aid agreements and contracts that would facilitate and expedite post-disaster emergency response and recovery.
- CM-8F. If any update of the hurricane evacuation study shows an increase or projected expansion in the time required to safely clear the roadways in and from areas subject to coastal flooding, measures shall be undertaken to maintain the existing evacuation period. These measures may include programming transportation improvements to increase the capacity of evacuation routes, eliminate congestion at critical links and

intersections, adjust traffic signalization or use directional signage, public information programs, or amendments to the Comprehensive Development Master Plan to reduce permitted densities in the areas subject to coastal flooding.

- CM-8G. The existing network of designated major evacuation routes shall be kept up-to-date utilizing the regional hurricane evacuation study or the best information available to Miami-Dade County.
- CM-8H. The Transportation Improvement Program shall include improvements to roadways that would eliminate severe congestion on major evacuation routes and critical links and intersections. All future improvements to evacuation routes shall include remedies for flooding. All local bridges shall be rated by the Florida Department of Transportation for structural and operational sufficiency. All State and local bridges with unsatisfactory sufficiency ratings shall be programmed for improvements, or where necessary, replacement.
- CM-8I. The Miami-Dade County Transit Agency shall allocate sufficient buses to safely evacuate areas with large concentrations of households without autos such as south Miami Beach. The Office of Emergency Management and Miami-Dade County Transit shall study options for securing drivers.
- CM-8J. The Office of Emergency Management (OEM) shall maintain and annually update a listing of people with special needs to plan for the mobilization required to safely evacuate and shelter those who may need assistance due to physical or medical limitations. All public shelters should be in compliance with the Americans With Disabilities Act of 1990. Special shelters within south, central, and north Miami-Dade County should be medically staffed and equipped for those persons in need.
- CM-8K. Miami-Dade County shall annually evaluate the need for expansion of its shelter capacity and provide for the projected number of hurricane evacuees as determined by the best information available. Existing and proposed future public facilities, such as schools, shall be inventoried to identify and designate additional structures suitable for shelters. Public facilities that are used permanently for public shelters shall be listed, mapped, and publicized.
- CM-8L. Miami-Dade County shall examine incentives for using privately owned buildings for public shelters and incorporate into its emergency plans a strategy for providing post-disaster shelter and temporary housing to large numbers of disaster victims.
- CM-8M. Miami-Dade County shall examine the feasibility of requiring, or adding as an option for new residential construction, a structurally reinforced "safe room" for use as a private storm shelter. For existing residences, Miami-Dade County shall encourage retrofitting a safe room on a voluntary basis. Miami-Dade County shall also explore incentives and other measures to encourage the wind and/or flood hardening of structures.
- CM-8N. No new mobile home parks shall be allowed in areas subject to coastal flooding, as depicted on Figure 13, and any new mobile home parks outside the areas subject to coastal flooding shall include one or more permanent structures in accordance with current and applicable building and construction codes for use as shelter during a

hurricane. All mobile home park residents, regardless of their location, shall be advised to evacuate in the event of a hurricane.

- CM-8O. Trees susceptible to damage by sustained tropical storm force winds (39 knots) shall be removed from the rights-of-way of evacuation routes and replaced with suitable, preferably native, species. To strengthen trees planted along roadways and reduce future breakage and blowdowns, the County shall implement an ongoing tree maintenance program of regular trimming and fertilizing and encourage other governments responsible for landscaped roadways to adopt similar tree maintenance programs.

Objective CM-9

Miami-Dade County shall continue to orient its planning, regulatory, and service programs to direct future population concentrations away from the Coastal High Hazard Area (CHHA) and FEMA "V" Zone. Infrastructure shall be available to serve the existing development and redevelopment proposed in the Land Use Element and population in the CHHA, but shall not be built, expanded, or oversized to promote increased population in the coastal high-risk area.

Policies

- CM-9A. Development and redevelopment activities in the Coastal High Hazard Area (CHHA), and the Hurricane Vulnerability Zone¹ shall be limited to those land uses that have acceptable risks to life and property. The basis for determining permitted activities shall include federal, State, and local laws, the pre-disaster study and analysis of the acceptability of various land uses reported in the County's Comprehensive Emergency Management Plan required by Policy CM-10A, when approved, and the following guidelines:
- i) Discourage development on the CHHA, including the barrier islands and shoreline areas susceptible to destructive storm surge;
 - ii) Direct new development and redevelopment to high ground along the Atlantic Coastal Ridge and inland environmentally suitable lands;
 - iii) Maintain, or reduce where possible, densities and intensities of new urban development and redevelopment within the Coastal High Hazard Area; to that of existing development and zoning;
 - iv) Prohibit construction of new mobile home parks and critical facilities in the Coastal High Hazard Area;
 - v) Prohibit Land Use Plan map amendments or rezoning actions that would increase allowable residential density in the FEMA "V" Zone, the CHHA or on land seaward of the Coastal Construction Control Line (CCCL) established pursuant to Chapter 161, F.S. unless it can be demonstrated that measures will be undertaken to maintain the existing evacuation period in accordance with Policy CM-8F; and,
 - vi) Continue to closely monitor new development and redevelopment in areas subject to coastal flooding to implement requirements of the federal flood insurance program.

¹ According to 92.0256, F.A.C., Hurricane Vulnerability Zones are defined as areas delineated in the regional or local evacuation plan as requiring evacuation in the event of a 100-year or category three hurricane event. In Miami-Dade County, the Hurricane Vulnerability Zones are considered Hurricane Evacuation Zones A and B.

- CM-9B. Land use amendments to the Comprehensive Development Master Plan shall not be approved in Coastal High Hazard Areas if they would decrease Levels of Service on roadways below the LOS standards established in the Transportation Element.
- CM-9C. Miami-Dade County shall consider undeveloped land in areas most vulnerable to destructive storm surges for public or private recreational uses and open space, including restoration of coastal natural areas.
- CM-9D. New facilities which must function during a hurricane, such as hospitals, nursing homes, blood banks, police and fire stations, electrical power generating plants, communication facilities and emergency command centers shall not be permitted in the Coastal High Hazard Area and when practical, shall not be located in the Hurricane Vulnerability Zone.
- CM-9E. Land use approvals, or zoning or other development permits or development orders that would allow for the construction or operation of new non-water dependent industrial or business facilities that would generate, use or handle more than 55 gallons of hazardous wastes or materials per year shall be prohibited in the Coastal High Hazard Area unless demonstrated that: no suitable site exists outside of these areas; and appropriate measures will be taken to prevent an accidental release during a storm event. Miami-Dade County shall take steps to ensure that existing County facilities of this type are adequately protected to prevent an accidental release during a storm event.
- CM-9F. Public expenditures that subsidize new or expanded infrastructure that would encourage additional population growth in the Coastal High Hazard Areas shall be prohibited. New public facilities shall not be built in the Coastal High Hazard Area, unless they are necessary to protect the health and safety of the existing population or for the following exceptions: public parks, beach or shoreline access; resource protection or restoration; marinas or Ports; or roadways, causeways and bridges necessary to maintain or improve hurricane evacuation times. Potable water and sanitary sewer facilities shall not be oversized to subsidize additional development in the Coastal High Hazard Area.
- CM-9G. Miami-Dade County shall coordinate with state and federal agencies to secure pre-disaster funding to reduce vulnerabilities to storm-related hazards. When feasible, expenditure of pre-disaster and post-disaster funding should prioritize vulnerable populations and ensure that social cohesion and neighborhood integrity is maintained.
- CM-9H. Miami-Dade County shall adopt and enforce floodplain management regulations that are consistent with, or more stringent than, applicable sections of 44 C.F.R. Part 60 and enforce flood-resistant construction requirements in the Florida Building Code. Further, Miami-Dade County shall take steps to attain a rating of Class 4 or better in the Community Rating System through the Federal Emergency Management Agency.
- CM-9I. All construction activities seaward of the coastal construction control line established pursuant to s. 161.053, F.S. shall be consistent with relevant sections of Chapter 161, F.S. and the Florida Building Code.

Objective CM-10

Reduce the exposure of life and property in Miami-Dade County to hurricanes through the planning and implementation of pre-disaster hazard mitigation measures. Pre-disaster planning for post-disaster redevelopment shall direct population concentrations away from the undeveloped designated Coastal High Hazard Areas and away from identified high-risk areas during post-disaster redevelopment.

Policies

- CM-10A. Miami-Dade County shall update its Comprehensive Emergency Management Plan every two years to provide comprehensive pre-disaster planning for pre- and post-disaster activities, development, and redevelopment.
- CM-10B. During pre-disaster planning, hazard mitigation proposals shall be developed by Miami-Dade County in conjunction with other agencies and, where appropriate, included in the Comprehensive Emergency Management Plan or the Comprehensive Development Master Plan.
- CM-10C. Prior to post-disaster redevelopment, sources of funds to reconstruct, relocate, or construct new public buildings and infrastructure, consistent with Policy CM-9F, shall be identified to support and expedite the demands generated by post-disaster reconstruction.
- CM-10D. Applications for comprehensive plan amendments, rezoning, zoning variances or subdivision approvals for all new development in areas subject to coastal flooding shall be reviewed for emergency evacuation, sheltering, hazard mitigation, and post-disaster recovery and redevelopment.
- CM-10E. During pre-disaster planning, Miami-Dade County shall determine the feasibility of relocating public buildings and infrastructure away from the Coastal High Hazard Area and Hurricane Vulnerability Zone, particularly the FEMA "V" Zone, except as provided in Policy CM-9F. The County shall develop a formal process and guidelines for evaluating alternatives to the replacement or repair of public facilities damaged by hurricanes such as abandonment, relocation, or repair and reconstruction with structural modifications. The costs; environmental impacts; mitigative effects; community impacts; economic development issues; employment effects; legal issues; consistency with state, regional and local plans; time period for implementation; and availability of funds should be evaluated for each alternative.
- CM-10F. The Coastal High Hazard Area (CHHA) and Hurricane Vulnerability Zone (HVZ) boundaries shall be delineated on-maps for the unincorporated areas as public information maintained by Miami-Dade County. The CHHA shall be identified using the Sea, Lake, Overland Surges from Hurricanes (SLOSH) model and shall be depicted as one of the maps in the Future Land Use Map series. Geographic Information Systems (GIS) and other forms of mapping will be used for the purpose of public information and government planning, administration, emergency management, zoning, and location of public facilities and services in the unincorporated areas of Miami-Dade County. This mapping shall be maintained by the Department of Regulatory and Economic Resources, the Office of Emergency Management, and other appropriate departments and updated as needed. The

SLOSH model shall be used to identify the Coastal High Hazard Areas. The Office of Emergency Management shall manage and update the SLOSH model and hurricane evacuation studies for Miami-Dade County and shall work with the South Florida Regional Planning Council to ensure that such maps and studies are done in a consistent manner, and that the methodology used for modeling storm surge is that used by the National Hurricane Center.

- CM-10G. In advance of major storms, Miami-Dade County shall identify and map areas in coordination with the Florida Department of Environmental Protection suitable and unsuitable for post-disaster relief staging areas, debris storage, disposal or burning. Debris shall not be located in wellfield protection areas, wetlands, parklands with adjacent natural areas, Natural Forest Communities, historic sites, and designated or known archaeological sites as determined by the County archaeologist, or other areas identified as unsuitable for such activities. Debris shall not be burned in the airsheds of Biscayne National Park and Everglades National Park.
- CM-10H. Miami-Dade County shall request the South Florida Water Management District (SFWMD), the U.S. Army Corps of Engineers, and the Federal Emergency Management Agency (FEMA) to develop interactive computer modeling capabilities between the Sea and Lake Overland Surge from Hurricanes (SLOSH) and inland flood models.
- CM-10I. Miami-Dade County shall seek funds to conduct a comprehensive marine hurricane contingency study to:
- i.) Describe what owners in all the major public and private marinas in Miami-Dade County expect to do with their boats in the event of a hurricane;
 - ii.) Identify areas of potential conflicts and needs;
 - iii.) Recommend appropriate solutions, such as emergency mooring systems;
 - iv.) Seek coordinated and multi-jurisdictional adoption and enforcement of the recommended solutions, and if applicable;
 - v.) Seek funding to implement capital improvement projects.
- CM-10J. All facilities subject to DERM's annual marine facilities operating permit shall provide as a part of their renewal a hurricane contingency plan.
- CM-10K. Miami-Dade County should evaluate potential risks to historic and archaeological resources from sea level rise and natural disasters and implement strategies to increase the resilience of these resources.

Objective CM-11

During post-disaster recovery and redevelopment, Miami-Dade County shall implement its Comprehensive Emergency Management Plan (CEMP) and applicable CDMP policies and assist hurricane damaged areas with recovery and hazard mitigation measures that reduce the potential for future loss of life and property.

Policies

- CM-11A. To facilitate post-disaster recovery and redevelopment following a major hurricane and consistent with available personnel and funding, Miami-Dade County shall implement the County's Comprehensive Emergency Management Plan as updated pursuant to Policy CM-10A.
- CM-11B. During post-disaster recovery periods, the Miami-Dade County Public Works and Waste Management Department, the Office of Emergency Management, the Department of Regulatory and Economic Resources and other appropriate agencies shall identify damaged areas requiring rehabilitation or redevelopment; implement the redevelopment plan along with public input to reduce or eliminate future exposure of life and property to future disasters; analyze and recommend to the County Commission hazard mitigation options for damaged areas and public facilities; and recommend amendments, if needed, to the Miami-Dade County Comprehensive Development Master Plan.
- CM-11C. If an area in need of major post-disaster redevelopment is determined to be a high-risk area for development, permitted post-disaster densities and intensities shall not exceed the permitted pre-storm densities and intensities.
- CM-11D. Miami-Dade County shall give priority to the public acquisition of properties in the HVZ and, in particular, in the CHHA that have been destroyed as a result of a hurricane. Miami-Dade County shall identify and encourage potential federal and state acquisition programs to assist with the purchase of these properties and for possible relocation of facilities on these properties to outside of the CHHA.
- CM-11E. During post-disaster redevelopment, structures which suffer repeated damage to pilings, foundations, or load bearing walls shall be required to rebuild landward of their present location and/or be structurally modified to meet current building codes.
- CM-11F. During post-disaster redevelopment the capacities of evacuation routes shall be improved through redesign and reconstruction of the street network, signage, and expansion of public transportation systems and services.

Objective CM-12

Protect, preserve, and sensitively reuse historic resources and increase the number of locally designated historic sites and districts and archaeological sites and zones in the coastal area.

Policies

- CM-12A. In addition to the policies contained in the Land Use Element, the County shall establish performance standards for the development and sensitive reuse of historic resources in the Coastal Area.
- CM-12B. The County shall work with the appropriate municipalities to ensure that historic structures included within designated historic districts are not destroyed unless they are damaged by a hurricane or otherwise rendered beyond reasonable use and repair.

CM-12C. The County shall improve the protection of historic resources from the damage caused by natural disasters and recovery operations by implementing pre- and post-storm hazard mitigation measures and code enforcement.

Coastal Management Monitoring Program

The Coastal Management Element contains the following monitoring measures:

Objective CM-1. Coastal Wetlands and Living Marine Resources Monitoring

The monitoring measure for this Objective will be to report the net change in coastal wetland area within Miami-Dade County. A second measure will be to report the net change in total area of submerged aquatic vegetation and/or hard bottom communities. The third measure will be the number of enforcement cases initiated that involved significant coastal wetland and marine resource impacts.

Objective CM-2. Beaches and Dunes and Offshore Reef Communities

The monitoring measure for this Objective will be to report area of restored beaches, expanded dune system and artificial reef sites, and the number of designated environmental protection areas.

Objective CM-3. Coastal and Estuarine Water Quality and Sediment Monitoring

The monitoring measure for this Objective will be that Miami-Dade County, in cooperation with State and federal agencies, will continue to develop water quality antidegradation targets. A second measure will be the number of pollution exceedances of water quality standards. A third measure will be the number and duration of occurrences of algal blooms and chlorophyll.

Objective CM-4. Wildlife and Wildlife Habitat Protection and Restoration

The monitoring measure for this Objective that focuses on wildlife will be the number of initiated wildlife and habitat studies and significant actions to implement regulations to protect coastal wildlife and habitat. A second measure will be the acreage of coastal habitat restored and the estimated number of species that may utilize them.

Objective CM-5. Water-dependent, Water-related, and Publicly Accessible Uses of Beaches and Shores

The monitoring measure for this Objective will be to report significant changes in the amount of shoreline devoted to water-dependent, water-related, and publicly accessible uses. A second measure will be the number of projects in the Shoreline Development review process which include public access.

Objective CM-6. Preserving Traditional Shoreline Uses and Minimizing User Conflicts and Impacts of Man-made Structures

The monitoring measure for this Objective will be to report significant changes in traditional shoreline uses, user conflicts, and construction impacts.

Objective CM-7. Public Awareness and Appreciation of Coastal Resources and Water-Dependent, Water-Related Uses

The monitoring measure for this Objective will be to report significant changes to programs which provide public awareness through park and school programs, special events, or the print and electronic media.

Objective CM-8. Storm Evacuation and Sheltering

The monitoring measure for this Objective will be to report estimated change in evacuation time based upon model simulations and public shelter capacity within Miami-Dade County. A second measure will be the number of residents enrolled in the Office of Emergency Management's Emergency Evacuation Assistance Program and the residential shuttering program.

Objective CM-9. Land Use, Development, and Infrastructure in Coastal High Risk Areas

The monitoring measure for this Objective will be to report land use plan amendments, population change, and infrastructure improvements in the CHHA.

Objective CM-10. Reduce the Risk of Lives and Property from Natural Disasters through Pre-disaster Hazard Mitigation and Post-disaster Redevelopment Planning and Activities

The monitoring measure for this Objective will be to report on the initiation or completion of the action reports for emergency response, recovery, and redevelopment. Changes in policies resulting from each after action report shall be evaluated.

Objective CM-11. Post-Disaster Recovery and Redevelopment

The monitoring measure for this Objective will be to report on the successful implementation of projects developed and funded through Miami-Dade County's local mitigation strategy.

Objective CM-12. Historical and Archaeological Preservation within the Coastal Area and Protection of these Sites from Natural Disasters

The monitoring measure for this Objective will be the implementation of hazard mitigation measures for historical and archaeological sites. A second monitorial measure shall be the number of historical and archaeological sites in the coastal area.