EXECUTIVE SUMMARY

Pursuant to §1013.372(2) and §252.385(2)(b), Florida Statutes, (Fla. Stat.) the Division of Emergency Management (Division) is responsible for preparing a *Statewide Emergency Shelter Plan* (the Plan). The Plan is a guide for local emergency planning. It also provides advisory assistance to school districts contemplating construction of educational facilities and the need to provide public shelter space within those facilities. The Plan is submitted to the Governor and Cabinet for approval by January 31 of each even-numbered year. The Plan identifies the general location and square footage of existing general population (GP) and special needs shelters (SpNS) space, by Regional Planning Council (RPC) region, and needed space during the next five (5) years. The Plan also includes information on the availability of shelters that accept pets. The Department of Health assisted the Division in determining the estimated need for hurricane evacuation shelter space. In accordance with the statute, the Plan must:

- Identify the general location and square footage of existing shelters by RPC regions;
- Identify the general location and square footage of needed shelters by RPC regions for the next five years;
- Identify the types of facilities which should be constructed to comply with the public shelter design criteria; and
- Recommend an appropriate and available source of funding for the additional cost of constructing emergency shelters within those public facilities.

With publication of the 2006 Plan, the Division began monitoring the status of the statewide inventory of SpNS. Historically, SpNS have been included in total population hurricane evacuation shelter demand estimates, hurricane evacuation shelter capacities and surplus/deficit results. Given the findings from the 2004 hurricane season where about half of the designated SpNS were located in facilities that did not meet the same minimum hurricane safety criteria as GP shelters, the Division was asked to separate the two shelters and monitor progress towards improving SpNS hurricane safety, client capacity and provision of standby electric power supported air-conditioning.

Table EX-1 provides a regional summary of the projected regional hurricane evacuation shelter space demands for 2014 and 2019, indicates the quantity of recognized hurricane evacuation shelter spaces per region, and if there is a surplus or deficit of spaces per region. At this time, eight (8) RPC regions have a surplus of GP hurricane evacuation shelter space in 2014 (West Florida/Region 1, Apalachee/Region 2, North Central Florida/Region 3, East Central Florida/Region 6, Central Florida/Region 7, Tampa Bay/ Region 8, Treasure Coast/Region 10 and South Florida/Region 11). Only four (4) regions have a surplus of SpNS space in 2014 (Regions 1, 5, 6 and 11).

Table EX-1.

Regional Summaries of Hurricane Shelter Demands, Capabilities, and Deficits/Surpluses for 2014 though 2019

General Population and Special Needs Shelters

RPC Region	RPC Region Name	General Population Shelter Demand and Capacities					Special Needs Shelter Demand and Capacities				
		2014 Category 5 Shelter Demand, persons	2019 Category 5 Shelter Demand, persons	2014 Risk Shelter Capacity, persons	2014 Shelter Surplus/ Deficit, persons	2019 Shelter Surplus/ Deficit, persons	2014 Category 5 Shelter Demand, clients	2019 Category 5 Shelter Demand, clients	2014 Risk Shelter Capacity, clients	2014 Shelter Surplus/ Deficit, clients	2019 Shelter Surplus/ Deficit, clients
1	West Florida (WF)	36,896	38,942	77,565	40,669	38,623	1,010	1,013	1,914	904	901
2	Apalachee (APAL)	12,099	12,380	33,680	21,581	21,300	3,025	3,095	814	(2,211)	(2,281)
3	North Central Florida (NCF)	28,747	29,274	33,536	4,789	4,262	2,290	2,307	1,062	(1,228)	(1,245)
4	Northeast Florida (NEF)	99,420	102,995	76,311	(23,109)	(26,684)	3,898	3,920	3,717	(181)	(203)
5	Withlacoochee (WITH)	67,248	73,404	28,864	(38,384)	(44,541)	934	938	2,530	1,596	1,592
6	East Central Florida (ECF)	139,786	163,780	156,704	16,918	(7,076)	4,080	4,098	7,915	3,835	3,817
7	Central Florida (CF)	45,295	48,415	61,076	15,781	12,661	4,275	4,358	1,459	(2,816)	(2,899)
8	Tampa Bay (TB)	139,892	145,616	182,293	42,401	36,677	10,256	10,339	6,854	(3,402)	(3,485)
9	Southwest Florida (SWF)	134,364	137,298	26,074	(108,290)	(111,224)	10,581	10,646	1,726	(8,855)	(8,920)
10	Treasure Coast (TC)	44,500	45,980	115,881	71,381	69,901	5,796	5,907	3,251	(2,545)	(2,656)
11	South Florida (SF)	87,855	91,516	132,719	44,864	41,203	4,294	4,305	4,979	685	674
	TOTALS:	**836,102**	**889,601**	**924,703**	**88,601**	**35,102**	**50,439**	**50,925**	**36,221**	**(14,218)**	**(14,704)**

Based upon currently available information, surpluses of GP space will continue in RPC regions 1, 2, 3, 7, 8, 10 and 11 through 2019. Region 6 may return to a deficit situation if an inadequate quantity of hurricane evacuation shelter space is added to the regional inventory over the next two (2) to five (5) years. The SpNS regional hurricane evacuation shelter space deficit situation is projected to remain the same through 2019 with seven (7) regions in deficit. It should be noted that these projections do not assume addition of new space to regional inventories through 2019. Addition of new space could significantly reduce or eliminate the projected deficits.

A comparison of both GP and SpNS indicates that only two (2) regions have a hurricane evacuation shelter space surplus for both shelter types through 2019: RPC regions 1 and 11. All other regions and their respective district school boards, Community Colleges and universities are required to construct new educational facilities in compliance with public shelter design criteria.

The types of public facilities that should be constructed to comply with the public shelter design criteria include all facilities that are subject to be used as public hurricane evacuation shelters under the authority of §252.385(4)(a), Fla. Stat.; that is, public schools Community Colleges, universities, and other facilities owned by state and local governments. When appropriately located, designed and constructed, the following types of facilities are normally considered suitable for use as public hurricane evacuation shelters:

> Community and civic centers, meeting halls, gymnasiums, auditoriums, cafeterias and open floor multipurpose facilities, exhibition halls, sports arenas, field houses, conference and training centers, certain classroom buildings, and other public assembly facilities.

The types of facilities that are not appropriate for use as public shelters are due to the following elements:

- location (facilities within Category 1, 2 or 3 hurricane evacuation zones, and possibly Category 4 and 5, flooding isolation, presence of certain hazardous materials, low evacuation demand, etc.),
- size (e.g., less than 2,000 square feet of usable floor area), or
- other characteristics (e.g., incompatibility of facility's normal use or availability with mass care function, long-range planning considerations, etc.).

During preparation of this Plan, the Division conducted a survey to estimate the compliance rate of school districts adhering to the statutory and code requirements of the public shelter design criteria for new school facilities construction. The Division wanted to determine if compliance with the existing law had improved since 2001. In 2001, the State Auditor General had a finding that, of the new schools reviewed, only 65 percent appeared to comply with the public shelter design criteria. Between 2001 and 2009 the Division observed a similar compliance rate of 65 percent. However, a more recent survey indicated improved compliance.

According to the Florida Inventory of School Houses (FISH) data, there were 112 new school buildings constructed between 2010 and 2012, with an estimated total net floor area of 1,673,498 square feet. The Division recognizes 26 of those facilities (383,542 square feet) as

meeting the public shelter design criteria, and another 59 buildings (972,144 square feet) were lawfully exempt for statutory and code provided causes. Therefore, the applicable school districts had a compliance rate of better than 80 percent.

District school boards have generally been reporting that the construction cost premium for incorporating the criteria is about four (4) percent. This is not necessarily an insignificant cost that must be borne by state and local agencies. Therefore, §1013.372(2), Fla. Stat. requires that the Division recommend an appropriate and available source of funding for the additional cost of constructing emergency shelters. The Division recommends the use of existing capital outlay funds as they are an appropriate and available source of state funding.

The Division has statutory duty and authority to administer a statewide program to eliminate the deficit of "safe" hurricane evacuation shelter space. To ensure consistency with state and national standards, guidelines and "best practices," the Division has recognized *Standards for Hurricane Evacuation Shelter Selection* (ARC 4496) as the minimum hurricane evacuation shelter survey criteria. Therefore, at a minimum, meeting ARC 4496 criteria is a required condition for a public facility to be described as "safe," "suitable" or "appropriate" during preparation of this Plan.

To accomplish this duty, the Division has implemented a multifaceted program. This program includes: 1) survey of existing buildings, both public and private, to identify suitable shelter capacity; 2) where cost effective (and practical), support mitigation and retrofitting of existing facilities to increase shelter capacity; 3) construction of new facilities to meet the public shelter design criteria; 4) shelter demand reduction through improved hurricane hazard models and behavioral studies; and 5) improve public information/education to reduce unnecessary "shadow" evacuations.

While regional deficits do remain, Florida's deficit of general population hurricane evacuation shelter space on a statewide aggregate basis has now been eliminated. However, a deficit of special needs hurricane evacuation shelter space persists. The Division's hurricane evacuation shelter survey and retrofit program identified, created or otherwise documented 462,216 hurricane evacuation shelter spaces that meet ARC 4496 guidelines. Public school new construction programs have created an additional 499,604 hurricane evacuation shelter spaces. Therefore, by the 2014 hurricane season, Florida will have a total of 960,924 shelter spaces that meet ARC 4496 guidelines. The perceived public shelter demand resulting from hurricane evacuation has been significantly reduced over the past 11 years due to improvements in public education and information, and more accurate storm surge/evacuation zone modeling with the use of the LiDAR (Light Detection and Ranging). The 2010 Statewide Regional Evacuation Studies (SRES) resulted in a statewide aggregate hurricane evacuation shelter space demand reduction of 604,792 spaces. Florida's hurricane evacuation shelter space demand for 2014 is 886,541.

With publication of this Plan, Florida now has 41 counties with demonstrable surpluses of General Population (GP) hurricane evacuation shelter space. The counties with surpluses of GP space include: Bay, Bradford, Brevard, Broward, Columbia, Escambia, Gadsden, Gilchrist, Hamilton, Hardee, Hendry, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Leon, Liberty, Madison, Manatee, Martin, Miami-Dade, Nassau, Okaloosa,

Orange, Osceola, Palm Beach, Pasco, Polk, Saint Johns, Saint Lucie, Santa Rosa, Seminole, Suwannee, Taylor, Union, Walton, and Washington.

There are fewer counties, 25, with a demonstrable surplus of SpNS hurricane evacuation shelter space. The counties with surpluses of SpNS space include: Bradford, Brevard, Broward, Citrus, Desoto, Duval, Gilchrist, Glades, Hernando, Hillsborough, Indian River, Lafayette, Levy, Marion, Martin, Miami-Dade, Okaloosa, Orange, Osceola, Putnam, Saint Johns, Santa Rosa, Volusia, Walton, and Washington.

As Florida's hurricane vulnerable population continues to grow, it is vitally important that construction of hurricane evacuation shelters and retrofitting of existing buildings be considered a priority. If Florida is to meet its goal of eliminating the hurricane evacuation shelter space deficit in every region of the state, the incorporation of the public shelter design criteria into new construction, retrofitting of suitable existing buildings, and continued use of improved hurricane evacuation studies and new technologies must continue to be accomplished. The overall result of full implementation of the Division's hurricane evacuation shelter deficit reduction strategy is a greater level of emergency preparedness, a more efficient capability for responding to incidents and a greater ability to meet the needs of disaster survivors.

1.0 INTRODUCTION

1.1 Purpose of Statewide Emergency Shelter Plan

Pursuant to §1013.372(2), and §252.385(2)(b), Florida Statutes (Fla. Stat.), the *Statewide Emergency Shelter Plan* (Plan) is prepared and submitted to the Governor and Cabinet for approval. The Plan provides information on existing and needed hurricane evacuation shelter space requirements. This information is then used by district school boards, Community College boards of trustees, university boards of trustees and emergency management agencies in planning for the construction of new educational facilities to comply with the public shelter design criteria. "Board," unless otherwise specified, means a district school board, a Community College board of trustees, and a university board of trustees.

This Plan, once approved, will determine which regions and counties are required to construct new educational facilities to comply with the public shelter design criteria. The Plan includes: the general location and square footage of existing general population and special needs shelters (SpNS) by region and county; the general location and square footage of needed general population and SpNS by region and county for the next five years; the types of facilities that should comply with the public shelter design criteria; and recommends an appropriate and available source of funding for the additional cost of constructing public hurricane evacuation shelters in those public facilities.

Since promulgation of the public shelter design criteria in 1997, the Division has routinely received requests for guidance on certain aspects of the criteria. Therefore, this Plan also includes advisory guidance by the Division on subjects relating to implementation of the criteria; such as, minimum mass care/human needs requirements not specified in the code, explanation of exemption criteria, etc. The guidance is not intended to be a comprehensive commentary of the criteria, but is limited to subjects pertinent to the most frequently asked questions. This Plan also includes a brief progress summary of statewide hurricane evacuation shelter space deficit elimination.

1.2 Background and Chronology

On August 24, 1992, Hurricane Andrew made landfall in South Florida as a Category 5 hurricane. Winds in excess of 155 miles per hour spread inland, causing catastrophic damage in Miami-Dade County and other south Florida areas. It has been estimated that 750,000 persons were ordered to evacuate coastal areas, inland flood prone areas and manufactured homes. In some cases, spontaneous (or “shadow”) evacuation of persons outside of areas ordered to evacuate also occurred. Though many evacuees sought shelter in motels or the homes of family and friends, many also sought safety in public shelter facilities in the affected area, and in communities along evacuation routes throughout the state. This unprecedented relocation of Florida’s residents and visitors in the face of an impending natural disaster stretched the resources of State, local, and private agencies to provide public shelter.

Post-disaster evaluations of evacuation and sheltering operations by the *Governor's Disaster Planning and Response Review Committee*, also known as the "Lewis Commission," identified the lack of adequate and appropriate public shelter space as a critical planning issue. The Lewis Commission Report served as the driving force behind the adoption of Chapter 93-211, Laws of Florida, and subsequent revisions to Chapters 235, 240 and 252, Florida Statutes. The educational facilities sections of Chapters 235 and 240 have been superseded by Chapter 1013. Based on those revisions, the Legislature stated its intent that Florida eliminate its deficit of safe public hurricane evacuation shelter space in every region of the State.

In consultation with county Boards, county emergency management offices and the Division of Emergency Management, the statute directed the Department of Education to develop standards for a public shelter design criteria. The new criteria were to be designed to ensure that appropriate new educational facilities can serve as public shelters for emergency management purposes. After promulgation of the criteria, all new educational facilities, or appropriate areas within facilities, for which a design contract was entered into after the effective date of inclusion in State Requirements for Educational Facilities (SREF), must be built in compliance with the criteria, unless the facility is exempted with concurrence of the applicable local emergency management agency or the Division.

The Department of Education entered into a contract with the University of Florida, School of Building Construction, to prepare the public shelter design criteria. The university assembled an advisory committee consisting of members from federal, state and local emergency management agencies, architects, engineers, academia, district school boards and the American Red Cross (ARC). The task before the advisory committee was to develop criteria that balanced the need to provide a relatively safe and self-sufficient facility, with the need for cost-effective designs and construction methods.

The advisory committee incorporated not only its collective knowledge, experience and existing national codes and standards, but also consulted with Texas Tech and Clemson Universities for severe storm research findings, and with relevant publications, such as the American Red Cross' *Mass Care—Preparedness and Operations* (ARC 3031, superseded by ARC 3041), *Guidelines for Hurricane Evacuation Shelter Selection* (ARC 4496), and the Department of Energy's (DOE) Standard *Natural Phenomena Hazards Design and Evaluation Criteria* (DOE-STD-1020).

The product of this process is a set of comprehensive design criteria that includes structural enhancements, potable water and sanitary requirements, provisions for emergency power, and other considerations that improve survivability and shelter management operations. The promulgation process began in 1994, and was adopted into SREF on April 28, 1997. Subsequently, along with other sections of SREF, the criteria were incorporated in Chapter 423 of the Florida Building Code, which became effective March 1, 2002. This provided a seamless continuation of the criteria for new school construction projects. The public shelter design criteria code provisions in effect at the time of publication of this Plan can be seen in Appendix B.

The public shelter program lessons learned from Hurricane Andrew were further reiterated during the 2004 and 2005 hurricane seasons. During these two seasons alone, approximately 15 million people in Florida were under evacuation orders due to eight (8) hurricanes and two (2) tropical storms. During 2004 and 2005, nearly every county in Florida was under hurricane or inland high wind warnings at some time, prompting mandatory evacuation orders for their coastal storm surge, inland flood vulnerable and manufactured home residents. More than 1,200 shelters were opened, which safely protected about 300,000 evacuees.

In a large-scale emergency, the availability of shelter space is a statewide challenge. Even if some individual counties have surplus shelter space, deficits in other counties will have statewide implications that will have to be addressed. Evacuees that cannot find shelter space within their own county or region will leave those areas in search of viable shelter alternatives elsewhere. Thus, implementation of the public shelter design criteria in new educational facilities is a critical component of Florida's hurricane evacuation shelter space deficit elimination program.

1.3 Statutory Considerations

There are several statutory authorities that are applicable for implementation of the public shelter design criteria. The following statutes have been selected to provide context for decisions relating to planning and exemption of educational facilities.

252.38 Emergency management powers of political subdivisions.--Safeguarding the life and property of its citizens is an innate responsibility of the governing body of each political subdivision of the state.

(1) COUNTIES.--

(d) During a declared state or local emergency and upon the request of the director of a local emergency management agency, the district school board or school boards in the affected area shall participate in emergency management by providing facilities and necessary personnel to staff such facilities. Each school board providing transportation assistance in an emergency evacuation shall coordinate the use of its vehicles and personnel with the local emergency management agency.

§252.38, Fla. Stat. provides that "Safeguarding the life and property of its citizens is an innate responsibility of the governing body of each political subdivision of the state." This places the burden for evacuating and sheltering at-risk citizens during an emergency or disaster upon county governing boards (i.e., Board of County Commissioners). To expand and expedite locally available resources to meet an emergency need, the Legislature directed that during a declared state or local emergency, district boards will upon request participate in emergency management by providing facilities, personnel, equipment and vehicles.

District public schools are the primary source of public shelter during tropical weather related emergencies, currently accounting for about 97 percent of statewide hurricane evacuation shelter space. Therefore, it can be presumed that public schools will be used as hurricane evacuation shelters, and often staffed by district personnel. It can also be presumed that public schools will be opened as shelters regardless of the storm's forecasted intensity and track.

Therefore, it is critical that new school facilities be appropriately designed and located to serve the required emergency function.

252.385 Public shelter space.--
(1) It is the intent of the Legislature that this state not have a deficit of safe public hurricane evacuation shelter space in any region of the state by 1998 and thereafter.

(2)(a) The division shall administer a program to survey existing schools, universities, Community Colleges, and other state-owned, municipally owned, and county-owned public buildings and any private facility that the owner, in writing, agrees to provide for use as a public hurricane evacuation shelter to identify those that are appropriately designed and located to serve as such shelters. The owners of the facilities must be given the opportunity to participate in the surveys. The state university board of trustees, district school boards, Community College boards of trustees, and the Department of Education are responsible for coordinating and implementing the survey of public schools, universities, and Community Colleges with the division or the local emergency management agency.

(b) By January 31 of each even-numbered year, the division shall prepare and submit a statewide emergency shelter plan to the Governor and Cabinet for approval, subject to the requirements for approval in s. 1013.37(2). The plan shall identify the general location and square footage of special needs shelters, by regional planning council region, during the next 5 years. The plan shall also include information on the availability of shelters that accept pets. The Department of Health shall assist the division in determining the estimated need for special needs shelter space and the adequacy of facilities to meet the needs of persons with special needs based on information from the registries of persons with special needs and other information.

(4)(a) Public facilities, including schools, postsecondary education facilities, and other facilities owned or leased by the state or local governments, but excluding hospitals, hospice care facilities, assisted living facilities, and nursing homes, which are suitable for use as public hurricane evacuation shelters shall be made available at the request of the local emergency management agencies. The local emergency management agency shall coordinate with these entities to ensure that designated facilities are ready to activate prior to a specific hurricane or disaster. Such agencies shall coordinate with the appropriate school board, university, Florida College, state agency, or local governing board when requesting the use of such facilities as public hurricane evacuation shelters.

§252.385, Fla. Stat. states the intent of the Legislature to eliminate the deficit of "safe" public hurricane evacuation shelter space. The Division was given both the duty and authority to administer a statewide program to survey public facilities and identify those that are appropriately designed and located to serve as public shelters. To ensure consistency with State and national standards, codes, guidelines and "best practices," the Division has recognized ARC 4496 as the minimum hurricane evacuation shelter safety criteria. Therefore, at a minimum, meeting the intent of ARC 4496 is a required condition for a public facility to be described as "safe," "suitable" or "appropriate" for recognition as a public hurricane evacuation shelter in this Plan. The public hurricane evacuation shelter capacities listed as "suitable" in this Plan are recognized by the Division as meeting ARC 4496 hurricane safety criteria.

Appendix A identifies the statewide inventory of facilities recognized as meeting the intent of ARC 4496 in their existing condition (i.e., "as-is"), facilities that have been retrofitted to meet ARC 4496, and facilities that have been constructed to meet ARC 4496. New school facilities that are reported by district school boards and local emergency management agencies as having been constructed to the public shelter design criteria are generally recognized by the Division to meet ARC 4496, though storm surge flooding hazards may limit recognition in some cases to exiting storms only.

The Division does not certify, approve or designate hurricane evacuation shelters. Through its survey program, the Division provides data and assistance to local emergency managers, who then use the ARC 4496 criteria as one factor in the selection of public shelters. In addition to the ARC 4496 ranking, local emergency managers consider other factors in the selection process, such as, type of event requiring sheltering (known or perceived hazards and risks); location; available staffing, equipment and material resources; internal/external movement circulation; availability of adequate toilets and sanitation; feeding capabilities; standby or emergency electric power capability; types of spaces available and their configuration and contents; and type and condition of roof covering; etc. When anticipated demand exceeds available ARC 4496 shelter space capacity, local emergency managers may select other facilities that afford the best available protection and features.

With the amendment of §252.385(2)(b), Fla. Stat. in 2006, the Plan is required to include information on the availability of pet-friendly public shelters as well as capacity of SpNS. The Department of Health is required to assist in determining need for SpNS.

§252.385(4)(a), Fla. Stat. makes available all suitable public facilities owned or leased by state or local government agencies upon request of the applicable local emergency management agency. This broadens the types of facilities that can be used by emergency management officials in a declared emergency, and is consistent with the Division's authority to survey all appropriate public facilities for use as public hurricane evacuation shelters.

1013.372 Education facilities as emergency shelters.—

(1) The Department of Education shall, in consultation with boards and county and state emergency management offices, include within the standards to be developed under this subsection public shelter design criteria to be incorporated into the Florida Building Code. The new criteria must be designed to ensure that appropriate new educational facilities can serve as public shelters for emergency management purposes. A facility, or an appropriate area within a facility, for which a design contract is entered into after the effective date of the inclusion of the public shelter criteria in the code must be built in compliance with the amended code unless the facility or a part of it is exempted from using the new shelter criteria due to its location, size, or other characteristics by the applicable board with the concurrence of the applicable local emergency management agency or the Division of Emergency Management. Any educational facility located or proposed to be located in an identified category 1, 2, or 3 evacuation zone is not subject to the requirements of this subsection. If the regional planning council region in which the county is located does not have a hurricane evacuation shelter deficit, as determined by the Division of Emergency Management, educational facilities within the planning council region are not required to incorporate the public shelter criteria.

As directed by law, the Department of Education was required to develop criteria, in consultation with district boards and state and local emergency management offices, to ensure that appropriate new educational facilities can serve as public shelters for emergency management purposes. The criteria are required to be incorporated into the Florida Building Code (i.e., s. 423.25, *Florida Building Code--Building*), and all new facilities for which a design contract is entered into after incorporation of the criteria into the code must be built in compliance with the criteria. The public shelter design criteria are applicable to both district school board and Community College facilities, and became effective on April 28, 1997. These criteria were also codified into the *Florida Building Code--Building* on March 1, 2002.

§1013.372(1), Fla. Stat. allows a board to exempt a facility from the criteria if the location, size or other characteristics is inappropriate for use as a public shelter. A facility that is located, or proposed to be located, in a Regional Planning Council region that is determined by the Division to have a hurricane evacuation shelter surplus may also be exempted. **It is unlawful and a violation of the Florida Building Code for a board to exempt a new educational facility from the criteria without the written concurrence of the applicable local emergency management agency or the Division.**

1013.74 University authorization for fixed capital outlay projects.—

(4) The university board of trustees shall, in consultation with local and state emergency management agencies, assess existing facilities to identify the extent to which each campus has public hurricane evacuation shelter space. The board shall submit to the Governor and the Legislature by August 1 of each year a 5-year capital improvements program that identifies new or retrofitted facilities that will incorporate enhanced hurricane resistance standards and that can be used as public hurricane evacuation shelters. Enhanced hurricane resistance standards include fixed passive protection for window and door applications to provide mitigation protection, security protection with egress, and energy efficiencies that meet standards required in the 130-mile-per-hour wind zone areas. The board must also submit proposed facility retrofit projects to the Division of Emergency Management for assessment and inclusion in the annual report prepared in accordance with s. 252.385(3). Until a regional planning council region in which a campus is located has sufficient public hurricane evacuation shelter space, any campus building for which a design contract is entered into subsequent to July 1, 2001, and which has been identified by the board, with the concurrence of the local emergency management agency or the Division of Emergency Management, to be appropriate for use as a public hurricane evacuation shelter, must be constructed in accordance with public shelter standards.

§1013.74(4), Fla. Stat., provide state university boards of trustees statutory duties similar as those of district public schools and Community Colleges. State universities, in consultation with state and local emergency management agencies, are directed to assess existing facilities to identify the extent to which each campus has public hurricane evacuation shelter space.

Each campus is then responsible for developing a five-year capital improvements program that identifies potential new and retrofitted facilities that can be used as public hurricane evacuation shelters. The statute indicates that the facilities will incorporate "enhanced hurricane resistance standards" and must be constructed in accordance with "public shelter standards," but does not specify the Florida Building Code's public shelter design criteria. The Division recommends use of the Florida Building Code's public shelter design criteria for university

facilities that are appropriate for use as public shelters. All campus buildings for which a design contract is entered into after July 1, 2001 are required to be constructed to the standard.

The statute indicates that a university board of trustees may exempt a facility from the criteria with the concurrence of the applicable local emergency management agency or the Division. A facility that is proposed to be located in a Regional Planning Council region that is determined by the Division to have a hurricane evacuation shelter surplus may also be exempted. As with district school boards and Community Colleges, **it is unlawful for a university board of trustees to exempt a new campus facility from the criteria without the written concurrence of the applicable local emergency management agency or the Division.**

381.0303 Special Needs Shelters. --

(2)(d) Local emergency management agencies shall be responsible for the designation and operation of special needs shelters during times of emergency or disaster and the closure of the facilities following an emergency or disaster. The local health department and emergency management agency shall coordinate these efforts to ensure the appropriate designation and operation of special needs shelters. County health departments shall assist the local emergency management agency with regard to the management of medical services in special needs shelters.

§381.0303(2)(d), Fla. Stat. requires local emergency management agencies to designate public SpNS. The Department of Health (through County Health Departments) is assigned the duty to assist with managing the medical service needs of the clients.

The Division strongly recommends that as with general population public hurricane evacuation shelters, public SpNS hurricane evacuation shelters designated by local emergency management agencies should meet the ARC 4496 hurricane safety criteria, and preferably designed and constructed to the public shelter design criteria.

2.0 EDUCATIONAL FACILITIES AS EMERGENCY SHELTERS

The public shelter design criteria, which are also known as Enhanced Hurricane Protection Area (EHPA) criteria, were designed to ensure that appropriate new educational facilities can serve as public shelters for emergency management purposes. The EHPA criteria can be found in Section 423.25, *Florida Building Code—Building*. Public educational facilities primarily serve an educational purpose. During a declared state of emergency these facilities may function as public shelters. The public shelter function is a lawfully authorized function, and during a declared state or local emergency can preempt normal educational functions. Therefore, consideration of the emergency management purpose is a critical component of the design of a new educational facility. The following sections will provide consultative (or advisory) guidance for implementing the criteria.

2.1 Public Shelter Design Criteria

The EHPA criteria ensure that new educational facilities meet or exceed applicable national design and construction standards, guidelines and "best practices." The EHPA criteria have been designed to significantly enhance occupant safety and building integrity. One of the main objectives of the EHPA is to ensure that these facilities continue to serve the public after exposure to a major hurricane.

It is highly recommended that prior to design that the facility owners, planners and designers incorporate the American Red Cross' ARC 4496 in the planning process for an EHPA. See Appendix C. ARC 4496 is the minimum hurricane evacuation shelter safety guideline used by the Division, American Red Cross and local emergency management officials for surveying and ranking public hurricane evacuation shelters. ARC 4496 can also be viewed at the following web address:

http://www.floridadisaster.org/Response/engineers/documents/newarc4496.pdf

ARC 4496 requires that public hurricane evacuation shelters be designed, constructed and capable of withstanding wind loads according to the American Society of Civil Engineers Standard 7 (ASCE 7). The EHPA code provisions recommend increasing the design map wind speed by 40 miles per hour. The Division endorses this recommendation.

Please review Appendix G for additional advisory guidance on design criteria, including wind and debris impact resistance, foundation and floor slab elevation, location and site requirements, shelter occupant capacity, plumbing and sanitation, electrical standby and emergency power systems, and emergency management considerations. There are other useful resources to be considered in the EHPA design process, such as: 1) International Code Council's *Standard on the Design and Construction of Storm Shelters* (ICC 500), 2) the Department of Energy's (DOE) Standard *Natural Phenomena Hazards Design and Evaluation Criteria* (DOE-STD-1020), and 3) the Federal Emergency Management Agency's (FEMA) publication *Design and Construction Guidance for Community Safe Rooms* (FEMA 361).

SpNS should meet the same hurricane safety criteria as general population shelters (ARC 4496 and other state and national public shelter criteria). Following the 2004 hurricane season,

the Division and Department of Health, in consultation with the Executive Office of the Governor, issued a memorandum stating an expectation that SpNS be located in facilities that at a minimum meet the ARC 4496 hurricane safety criteria, that SpNS client occupied areas have standby power supported air-conditioning, and that client shelter spaces be based on 60 square feet per client (20 square feet is used for general population shelter spaces). The 60 square feet of space includes an allowance for care-givers and medical equipment. For further guidance, please see the following memorandum dated June 6, 2005:

http://www.floridadisaster.org/documents/Agwunobi-Fugate%20SpNS%206-7-2005.pdf

2.2 Exemption Criteria

All new educational facilities must be designed and constructed to comply with the EHPA criteria unless specifically exempted by the board with written concurrence of the applicable local emergency management agency or the Division. See §1013.372, Fla. Stat.

It is unlawful and a violation of the Florida Building Code for a board to exempt a new educational facility from the criteria without the written concurrence of the applicable local emergency management agency or the Division.

The fact that the EHPA criteria may increase the cost of construction of a facility, by itself, is not a factor that will be considered for an exemption by the Division. Cost of construction may only be considered as one of a number of factors when selecting which new facilities are to be designed and constructed to meet the EHPA criteria. Selection may be based upon cost-effectiveness, greatest provision of shelter space, and other factors that enhance shelter usefulness.

The EHPA requirement applies to any building construction project that is "new construction," as defined in §1013.01(14), Fla. Stat. and s. 423.5.8, *Florida Building Code—Building*. That is, any construction of a building or unit of a building in which the entire work is new, or an entirely new addition connected to an existing building. This includes replacement buildings and new buildings and additions constructed on existing campuses. The EHPA requirement also applies to reuse and prototype plans, since they are required to be code updated with each new project.

The EHPA requirement is not limited to rooms or spaces defined as "core facilities" in §1013.01(5), Fla. Stat. The statutory definition is intended for educational facilities purposes, and defines "core facilities" to be media centers, cafeterias, toilet facilities and circulation space (e.g., corridors, lobbies, etc.) §1013.372(1), Fla. Stat. states that "A facility, or an appropriate area within a facility…must be built in compliance with the (EHPA criteria) unless the facility or a part of it is exempted…" The statute does not limit EHPA's to "core facilities," but permits use of an entire facility, or appropriate areas within a facility.

Both the Florida Statutes and the Florida Building Code provide factors to consider in exempting an educational facility from complying with the criteria. ARC 4496 may also provide supplemental guidance to consider in the exemption process. The following subsections provide advisory guidance when considering an exemption request.

2.2.1 Location.

In general, there are five factors to be considered when making an exemption request due to location: 1) location of the proposed EHPA site within an identified Category 1, 2 or 3 (or A, B or C) hurricane evacuation zone; 2) location subject to hurricane-related rainfall or storm surge flooding or isolation; 3) location on a coastal barrier island; 4) location within the evacuation zone of facilities that manufacture, use or store certain types and quantities of hazardous materials; and 5) low evacuation demand.

Category 1, 2 or 3 Evacuation Zone. New educational facilities located or proposed to be located in an identified Category 1, 2 or 3 hurricane evacuation zone are exempt from the EHPA criteria. "Hurricane Evacuation Zones" are areas designated to be evacuated for particular hurricane scenarios to protect an at-risk population from flooding. Evacuation zones are developed taking into consideration all populated areas having a significant risk of flooding, areas not subject to flooding but may be cut-off or completely surrounded or isolated by flooded areas, and the need to be easily communicated to the public.

Hurricane evacuation zones are applicable to coastal counties, and possibly counties adjacent to Lake Okeechobee. Hurricane evacuation zones include areas that are subject to storm surge inundation, as predicted by the National Weather Service's Sea, Lake and Overland Surges from Hurricanes (SLOSH) model. Category 1, 2 and 3 evacuation zones are subject to evacuation during land-falling major hurricanes, as well as paralleling and exiting major hurricanes.

Category 4 and 5 hurricanes are relatively uncommon events, and based upon the storm track heading with respect to coastline (i.e., land-falling, paralleling or exiting), Category 4/5 hurricane evacuation zones may not be inundated by storm surge. Therefore, new educational facilities proposed to be located in Category 4/5 evacuation zones are not statutorily exempt from the EHPA criteria.

Also, to facilitate communication of evacuation orders to the public during an emergency, hurricane evacuation zones are typically established using geographic, jurisdictional or transportation/utility boundaries and landmarks that are known and readily identified by the local population. Therefore, hurricane evacuation zone boundaries may extend further inland than the SLOSH model predicted inundation areas. New educational facilities proposed to be located in a Category 4 or 5 evacuation zone may in fact be outside of the SLOSH predicted inundation areas. EHPA's located in Category 4 or 5 evacuation zone may provide emergency managers with additional sheltering options.

The 2010 Statewide Regional Evacuation Studies (SRES) introduce alphabetic Evacuation Zones (A-E) across the State. For planning purposes, the reference to areas to be evacuated from a Category 1 hurricane is Evacuation Zone A, reference to areas to be evacuated in advance of a Category 2 hurricane is Evacuation Zone B, and reference to areas to be evacuated from a Category 3 hurricane is Evacuation Zone C. Similarly, references to evacuation areas from Category 4 or 5 hurricanes are Evacuation Zones D or E respectively.

Category 4/5-related exemption decisions will be dependent upon the magnitude of the county and regional hurricane evacuation shelter space deficit, local logistical support capabilities and the availability of suitable alternatives (either in-place, or within the framework of a five-year plan.)

Rainfall or storm surge flooding or isolation. New educational facilities proposed to be located in areas subject to flooding or isolation due to rainfall or storm surge related flooding may be inappropriate for use as public hurricane evacuation shelters. Rainfall flooding includes closed-basin ponding, riverine and containment failure of dams and reservoirs. Extended-periods of isolation of a shelter population presents logistical challenges for emergency managers and mass care support agencies, which normally prefer equally suitable buildings not subject to flooding or isolation. The challenges include staff rotation, resupply of food, water and other consumables, emergency medical assistance, sanitation, security concerns, communication, etc. Flooding and isolation-related exemption decisions will be dependent upon the magnitude of the county and regional hurricane evacuation shelter space deficit, design and construction standards of the facility, shelter floor elevation, local logistical support capabilities and the availability of appropriate alternatives (either in-place, or within the framework of a five-year plan.)

Coastal Barrier Island. Coastal barrier islands are often less than two (2) miles wide with very low ground elevations above mean sea level (AMSL). As such, they are exceptionally at-risk to storm surge inundation, isolation, and exposure to the full force of hurricane winds. Also, ARC 4496 states that hurricane evacuation shelters must not to be located on barrier islands. Therefore, facilities on coastal barrier islands are often subject to an exemption from the EHPA criteria. Coastal barrier island exemption decisions will be dependent upon the magnitude of the county and regional hurricane evacuation shelter space deficit, shelter floor elevation, local logistical support capabilities and the availability of appropriate alternatives (either in-place, or within the framework of a five-year plan.) The Division uses §161.54(2), Fla. Stat., to provide a definition for coastal barrier islands.

Hazardous Materials. Location of a proposed new educational facility within the Vulnerability Zone (VZ) of facilities that manufacture, use or store certain types and quantities of hazardous materials may make it unsuitable for use as public hurricane evacuation shelter. Just as with flooding isolation concerns, the possible impact of a hazardous materials spill or release presents public safety and logistical challenges to emergency managers and mass care support agencies. In addition to the challenges listed for flooding isolation, hazardous materials emergencies include detecting and warning of presence of a hazard, and implementing shelter-in-place or evacuation actions. However, most facilities with reportable quantities of hazardous materials are considered a low risk of hurricane-related spill or release due to presence of mitigation measures (e.g., limited quantities of materials, hardening of containment structures, etc.)

Hazardous materials-related exemption decisions will be dependent upon the potential for and probable impact of a hurricane-related spill or release, potential hurricane evacuation shelter's distance from hazardous materials facility, guidance from Local Emergency Planning Committee (LEPC) and local fire department, magnitude of the county and regional hurricane

evacuation shelter space deficit, detection and warning capabilities, local logistical support capabilities and the availability of appropriate alternatives (either in-place, or within the framework of a five-year plan.)

It should be noted that many educational facilities use or store hazardous materials that are used for janitorial services and maintenance, vocational or laboratory uses, refrigeration, water treatment, etc. Such materials are normally very limited in quantity, and suitably stored or protected, and therefore rarely a significant consideration for an exemption. The Division recommends consultation with the applicable LEPC and local fire department to determine appropriate precautionary measures.

Low Evacuation Demand. New educational facilities proposed to be located in areas with low evacuation demand may be considered for an EHPA exemption. Emergency managers and other mass care providers prefer to locate hurricane evacuation shelters in close proximity to the evacuees they will serve. Therefore, the emergency management agency may reduce the EHPA floor area square footage requirement to meet local evacuation demand needs, or possibly exempt the entire facility if a suitable alternative is available. Low evacuation demand exemption decisions will be dependent upon the magnitude of the county and regional hurricane evacuation shelter space deficit, local shelter demand needs and the availability of appropriate alternatives (either in-place, or within the framework of a five-year plan.)

2.2.2 Size.

The required size of a hurricane evacuation shelter is very dependent upon local circumstances. To effectively utilize available resources and operational plans (e.g., staffing, feeding, security, etc.), a hurricane evacuation shelter located in an area with low evacuation demand can be significantly smaller than a facility located near a highly populated hurricane evacuation zone. Public hurricane evacuation shelters can range from as small as about 50 spaces to mega-shelters as large as several thousand spaces.

§252.385(4)(b), Fla. Stat. can serve as a guide when establishing a minimum size criterion for public hurricane evacuation shelters. This statute applies to suitable Department of Management Services owned or leased facilities, and requires that the facility have a minimum of 2,000 square feet of net floor area. The required minimum net floor area can be in a single room, or a combination of rooms each having a minimum of 400 square feet of net floor area. At 20 square feet per shelter space, this translates into a minimum capacity of about 100 spaces.

Therefore, to be consistent with §252.385(4)(b), Fla. Stat., the Division generally considers new educational facilities with less than 2,000 square feet of net usable floor area to be small enough for an exemption.

2.2.3 Other Considerations.

"Other Considerations" is interpreted to mean any factor that is determined to make the facility inappropriate for use as a public hurricane evacuation shelter. This will generally be related to incompatibility of a facility's normal function or availability with public shelter operations.

As examples, the following types of spaces are normally excluded during calculation of net usable occupant capacity of a hurricane evacuation shelter, and are therefore often avoided by emergency managers when selecting shelters:

> Mechanical, plumbing, electrical, telephone and communication equipment rooms, storage rooms and closets, exterior/outside circulation and corridors, restrooms and shower areas, kitchen and food preparation rooms, science labs, computer and information technology labs, vocational and industrial technology labs and shops, library and media rooms, exercise rooms with fixed equipment, administrative office and support areas, data and word processing rooms and areas, record vaults, mail rooms, custodial rooms and work areas, medical clinic and first aid rooms, residential and dormitory rooms, radio or television broadcast facilities, attics and crawl spaces, etc.

New educational facilities that are designed exclusively to serve these functions may be exempted from complying with the EHPA criteria.

Other considerations may also include local strategies and long-range plans. As an example, to reduce costs and maximize hurricane evacuation shelter usefulness, a board and local emergency management agency may agree (in writing) that 100 percent of the floor area of new high schools will be constructed to the EHPA criteria, instead of the minimum of 50 percent, in exchange for reducing or eliminating EHPA requirements for middle and elementary schools. The proposed plan eliminates the county hurricane evacuation shelter space deficit, plus creates additional space toward reducing the regional deficit, within about five years. Thus the long-range plan achieves statutory intent, and exemptions for applicable middle and elementary schools are appropriate.

2.2.4 Alterations, Maintenance or Repair of Existing Buildings.

Florida Statutes and the Florida Building Code both state that the EHPA criteria apply to "new educational facilities." Therefore, renovations, remodeling, maintenance and repair of existing buildings, as defined in §1013.01, Fla. Stat. and s. 423.5, *Florida Building Code--Building*, are exempt from compliance with the EHPA criteria.

2.2.5 Regional Surplus of "Safe" Hurricane Evacuation Shelter Space.

§1013.372, Fla. Stat. states that new educational facilities proposed to be located in a Regional Planning Council (RPC) region that does not have a hurricane evacuation shelter space deficit are not required to incorporate the EHPA criteria. The hurricane evacuation shelter surplus/deficit determination is established by biennial publication and approval of this Plan, which guides exemption decisions over a five year planning period.

As can be seen in Figure 2-1, eight (8) RPC regions have a surplus of general population hurricane evacuation shelter space in 2014, which includes RPC regions 1, 2, 3, 6, 7, 8, 10, and 11. Based upon currently available information, surpluses will continue in RPC regions 1, 2, 3, 7, 8, 10, and 11 through 2019. RPC region 6 could return to a deficit if no additional hurricane evacuation shelter spaces are added to the inventory. However, as can be seen in Figure 2-2 there is a surplus of SpNS spaces in only four (4) regions, to include regions 1, 5, 6 and 11. The SpNS space deficits are projected to continue into 2019 if no new space is added to the inventory.

With the exception of two (2) regions (regions 1 and 11), all other regions have hurricane evacuation shelter space deficits in either general population, SpNS or both shelter types. Therefore, per §1013.372(1) and §1013.74(4), Fla. Stat. their respective district school boards, Community Colleges and universities are required to construct new educational facilities in compliance with the public shelter design criteria.

Figure 2-1. Regional Hurricane Evacuation Shelter Space Surplus/Deficit Status of General Population Shelters

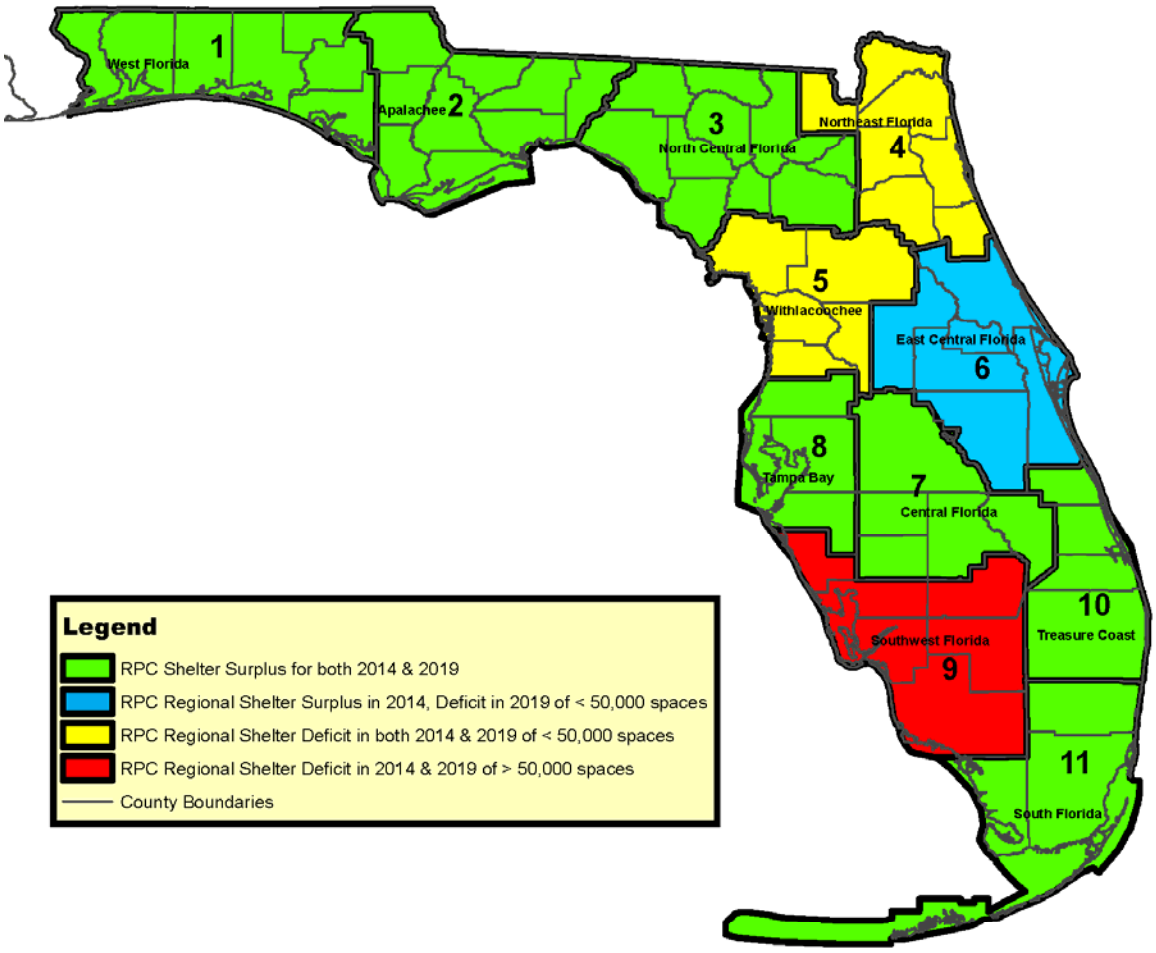
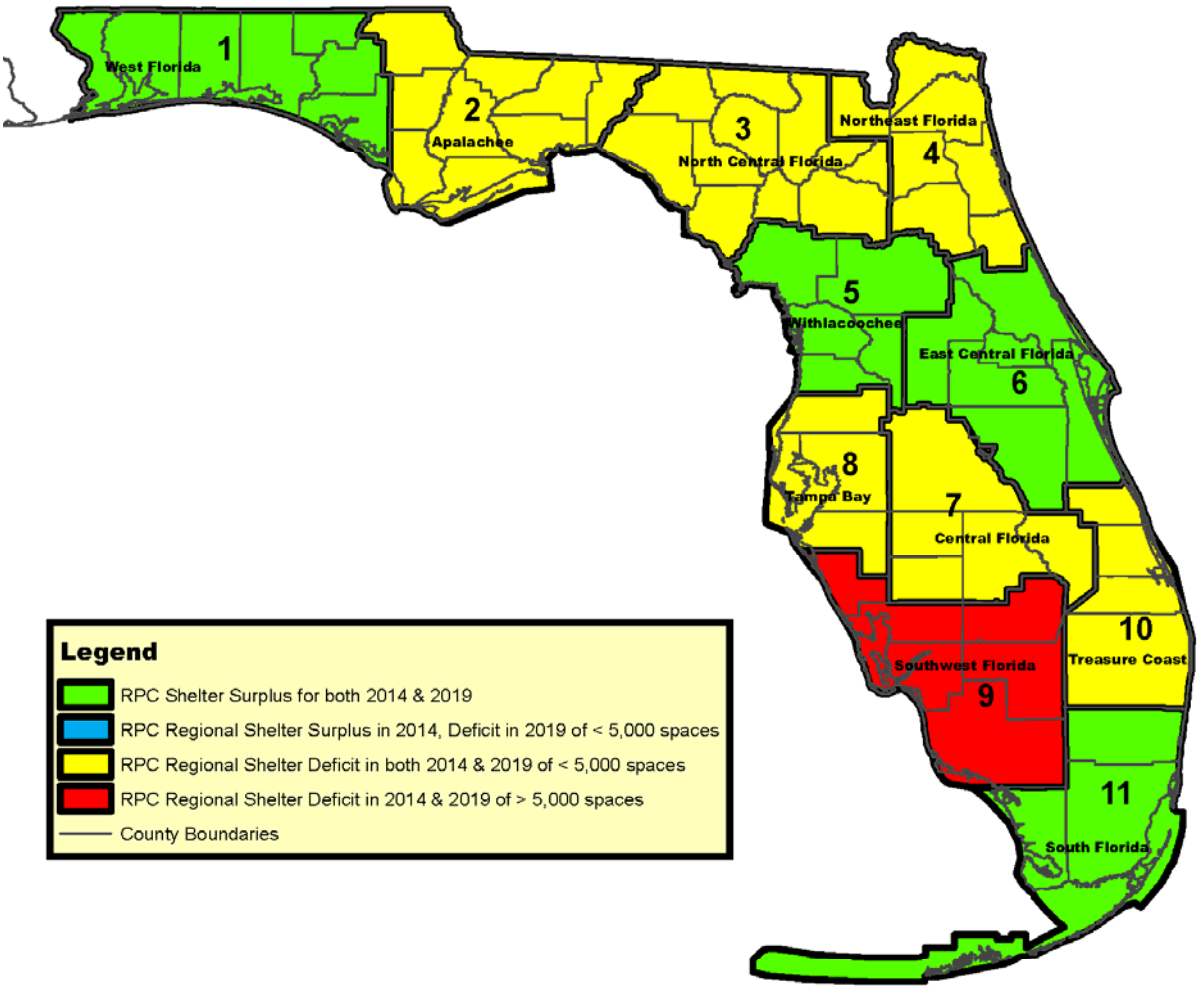


Figure 2-2. Regional Hurricane Evacuation Shelter Space Surplus/Deficit Status of Special Needs Shelters



Exemption Process

In accordance with §1013.372, Fla. Stat. and s. 423.25, *Florida Building Code--Building*, the following procedure is recommended by the Division when requesting exemptions from the public shelter design criteria/EHPA requirement:

1. The board must notify the local emergency management agency of all educational facility construction projects that meet the definition of new construction.

2. The board must evaluate each new educational facility construction project to determine if a statutory or code specified exemption to the criteria is applicable.

3. If an exemption is not requested, the board should consult with the local emergency management agency to identify those areas of the new facilities that will maximize public shelter capacity, and meet the needs of both the educational and emergency management purpose.

4. If the board requests an exemption, the request must be prepared and submitted in writing to either the local emergency management agency or the Division. The request must identify the specific statutory or code factor(s) to be considered for the exemption, and provide appropriate supporting documentation.

5. If the local emergency management agency or the Division concurs with the exemption request, a written response stating the concurrence will exempt the new educational facility from the criteria.

6. If the local emergency management agency or the Division does not concur in writing with the exemption request, then the board must comply with the criteria.

2.3 Estimate of School District Compliance with EHPA Requirements (2010-2012)

In 2001, staff from the Auditor General's Office performed a hurricane shelter and grant management operational audit of the Department of Community Affairs. See Auditor General Report No. 02-055, dated October, 2001. In Finding No. 2 of the report, the Auditor General found that a significant number of new educational facilities, constructed by district school boards and Community Colleges, had not complied with the public shelter design criteria, and had not received an exemption (written) by local emergency management agencies or the Division. Given the projected deficits of public hurricane shelter space in this state, the Auditor General indicated that steps must be taken to remedy the situation.

The Auditor General recommended that the Division, in consultation with the State Legislature, Florida Department of Education and local emergency management officials, continue its efforts to ensure compliance with the provisions of the law. Subsequently, the Department of Education distributed memorandum number DPBM No. 02-42 (from Wayne V. Pierson, dated October 31, 2001) that reiterated the necessity for compliance with the statute. A copy of memorandum DPBM No. 02-42 is included in Appendix I.

Since distribution of the Auditor General's report and the Department of Education's memorandum in 2001, the Division has taken additional steps to encourage compliance with the EHPA criteria through the emergency management community. In 2003, with the assistance of the Department of Education, the Division compiled a list of new school facilities from the Florida Inventory of School Houses (FISH) with construction years between 2000 and 2003. Unless exempted, these school facilities were lawfully required to incorporate the EHPA criteria. The lists were forwarded to local emergency managers to assist them in determining local compliance, as well as assist in identifying additional unreported shelter capacity.

The Division also annually requests hurricane shelter capacity data from local emergency management agencies that is sorted to differentiate new school EHPA's, retrofit, and "as-is" (i.e., ARC 4496 hurricane shelter facilities that are not classified as a retrofit or EHPA) shelter space. This data is used to monitor progress toward eliminating county-level, regional and statewide hurricane shelter space deficits. The data also provides a means of tracking EHPA productivity on an annual basis.

The Division substantially revised the 2004 Plan to incorporate guidance to assist local school boards and emergency managers with implementing the criteria. The Division and Department of Education also participated in presentations and workshops at conferences that included the topic of EHPA construction requirements, code compliance and implementation strategies. The conferences were attended by emergency managers and their shelter program partners, school board officials, code enforcement officials, architects and engineers (e.g., National Hurricane Conference, Governor's Hurricane Conference, Florida Emergency Preparedness Association Meetings, etc.)

From 2000 through 2009 the Division observed similar results to those of Auditor General staff in 2000. Therefore, the 2004 through 2010 Plans reported a cumulative average of about 65 percent compliance.

In preparation for the **2**014 Plan, the Division again collaborated with the Department of Education to compile a list of new school buildings from the FISH data. However, for the 2014 Plan, the list of new buildings was limited to those constructed in years 2010 thru 2012 with at least 4,000 net square feet. Universities and Community Colleges were not included primarily due to the fact that they only account for about two (2) percent of the statewide shelter space inventory. The data was then used in coordination with local emergency managers to estimate compliance by school boards with the EHPA requirement for years 2010 thru 2012.

The FISH data was analyzed to determine which facilities were located in Category 1, 2 or 3 storm surge evacuation zones, and those that had relatively little usable floor area (i.e., less than 2,000 square feet of net usable space). These characteristics provide a cause for an exemption. The Division also incorporated data from the facilities that were previously recognized as meeting EHPA criteria. The data was then tabulated and distributed to local emergency managers. The Division requested that local emergency managers verify which facilities are recognized as EHPA's, and which facilities (if any) received exemptions from their office. The Division has not granted an exemption, so any exemptions would have been local. Table 2-1 provides a summary of the findings.

According to FISH data, there were 112 new school buildings (based on at least 4,000 net square feet of area per room types listed in Appendix H) constructed between 2010 thru 2012, with an estimated total net floor area of 1,673,498 square feet. The Division recognizes 26 facilities (383,542 net square feet) as meeting the EHPA requirements of the law, and another 59 buildings (972,144 square feet) were lawfully exempt for statutory and code provided causes. Therefore, 85 of 112 new buildings complied with statutory and code EHPA requirements.

Since the EHPA code requirements are based on achieving a minimum quantity of floor area square footage, the square footage is the most reliable means of estimating compliance. The combined floor area square footage of the non-compliant buildings is 317,812 square feet, or a non-compliance rate of (19) percent. The result of the survey indicates that compliance rate, statewide, has improved. The Division will continue to coordinate with the Department of Education and local emergency managers to monitor and improve compliance.

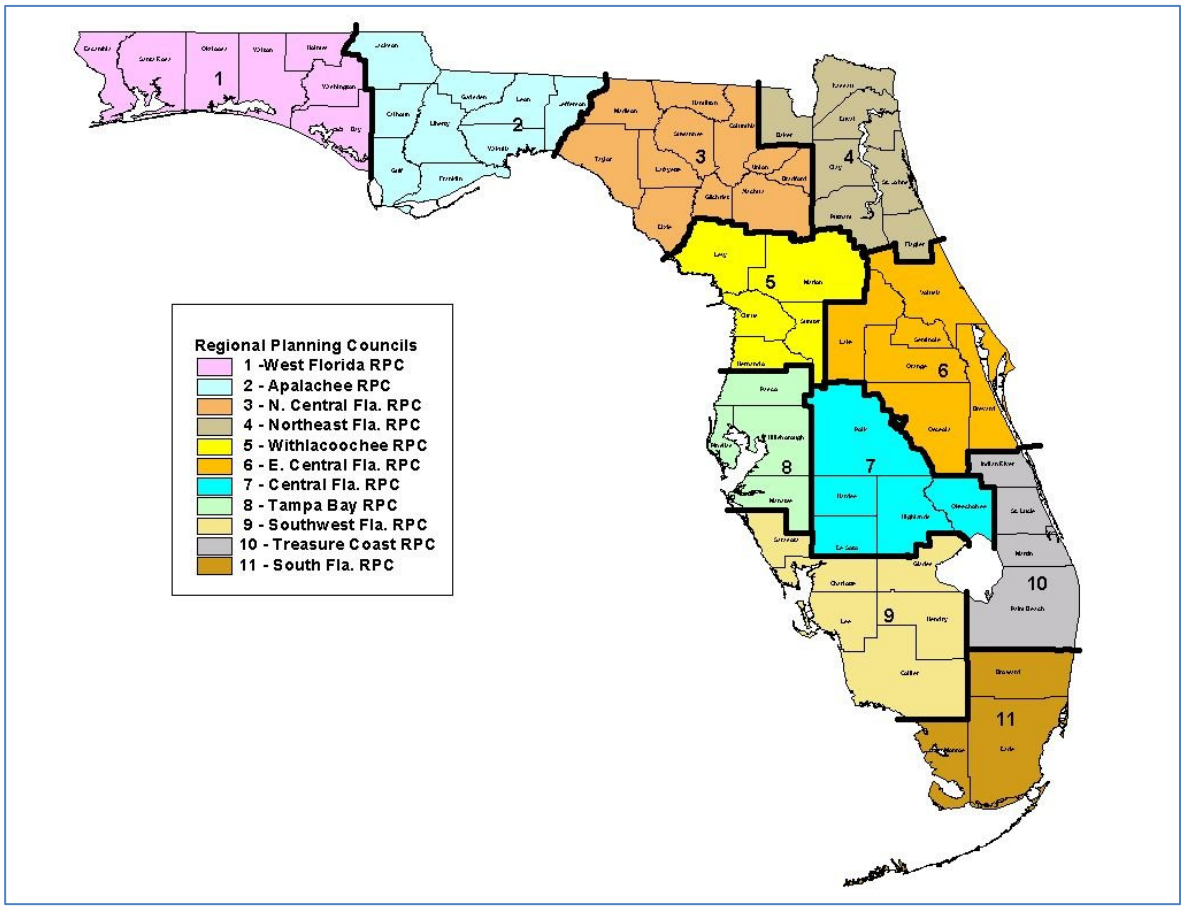
Table 2-1. Estimate of Local Compliance with EHPA Requirements Years 2010 thru 2012		
Description	**Number of Buildings**	**Net Square Feet**
Total Number of New Buildings	112	1,673,498
Division Recognized EHPA Buildings	26	383,542
Total Number of New Buildings exempted per Code	59	972,144
Total Number of New Buildings that met Lawful Requirements	85	1,355,686
Total Number of New Buildings that did not meet Lawful Requirements	27	317,812
Potential EHPA Space Lost (50% required by Code)	---	317,812
Potential EHPA Net Square Feet Lost (usable NSF after application of usability factors)	---	158,906
Potential EHPA Spaces Lost (at Code required 20 square feet each)	---	7,945
Description	**Percent of Buildings**	**Percent of Net Square Feet**
Percentage of New Buildings that Complied with the Law	76%	81%
Percentage of New Buildings that did not Comply with the Law	24%	19%

3.0 REGIONAL HURRICANE EVACUATION SHELTER REQUIREMENTS

The State of Florida underwent a comprehensive Statewide Regional Evacuation Study (SRES) which was completed in late 2010. This study includes an update of SLOSH modeling and storm surge zones for all of Florida's basins; to include Light Detection and Ranging (LiDAR) data of the state's entire coastline; a statewide evacuation Behavioral Study; and development of a statewide Shelter Analysis and Transportation modeling tool. The data from the 2010 SRES was utilized for the projected 2014 and 2019 data used for the 2014 Plan. The overall projected population in the 2012 Plan was 19,979,199 (Source: 2010 SRES). The University of Florida's Bureau of Economic and Business Research (BEBR) projected the total population for 2014 to be 19,490,068. Since the 2012 Plan projections are slightly higher (+489,131) than the 2014 BEBR Projections, the 2012 Plan Demand has been reused for the 2014 Plan shelter demand. One change in the methodology from the 2012 Plan is a comment period was created for County Emergency Managements to provide input on their Shelter Demand Projections. County Emergency Managements are seeking similar trends for planning purposes but they have the advantage of being more familiar with the variables in their jurisdiction. Counties which provided input during the comment period are marked with (*) in Appendix J.

The SRES regional boundaries are identical with the RPC regional boundaries. The RPC regions and their respective counties are shown in Figure 3-1 for illustration purposes.

Figure 3-1. Regional Planning Council (RPC) Regions of Florida



3.1 Methodology for Calculating Regional and County Hurricane Evacuation Shelter Status

Location and Square Footage of Existing Shelters. The location and square footage of existing shelters can be found in Appendix A, which provides a detailed inventory of hurricane evacuation shelter locations and capacities within each region and county. The tables in Appendix A use the term "risk" shelters (or "risk evacuation shelter"). Risk evacuation shelters include those recognized by the Division as meeting the intent of ARC 4496 hurricane safety criteria and identified as appropriate for use during a hurricane impact. The term "risk" evacuation shelter is further defined in Appendix E.

Location and Square Footage of Needed Shelters. Region/County estimates for Shelter Capacity, Shelter Demands, and Shelter Surpluses/Deficits are provided in Table 3-1 and are based on Saffir-Simpson Hurricane Intensity Category 5 (Category 5) evacuation worst case scenario. Results contained in Table 3-1 for 2014 and 2019 are displayed in number of persons. Region/ County square feet estimates for 2014 and 2019, using the same Category 5 worst case scenario, are provided in Table 3-2.

Shelter Demand Sources/Results by County. The 2014 through 2019 county shelter demand estimates for vulnerable populations are provided for Category 5. Vulnerable populations are defined as populations located in storm surge vulnerable areas (coastal and inland lake or river), rainfall flood prone areas and those living in mobile or manufactured housing. Source data for these estimates, including demographics, estimated percent vulnerable populations, estimated percent of vulnerable populations expected to seek public shelter, and other sources are shown in Appendix J.

The 2014 through 2019 population estimates are based on the information contained in the 2012 Plan which utilized information from the 2010 SRES. The vulnerable populations and the percentage expected to seek shelter were also derived from 2012 Plan. The Statewide Regional Evacuation Studies used the following guiding principles for the demographic analysis:

1. The best available data should be used for creating housing unit counts and population estimates, housing unit and population projections, and demographic profiles.
2. All regional studies use the April 1, 2006 of University of Florida's BEBR baseline for housing unit and population estimates, with April 1, 2010 (2014 Plan) and April 1, 2015 (2019 Plan) projections for comparison with adjustments directed by County Emergency Managements.
3. Demographics estimates for both counties and small areas for the baseline and the projections for 2010 (2014 Plan) and 2015 (2019 Plan) should be consistent with "official" county-level totals (current state estimates and projections from the University of Florida's BEBR or adopted comprehensive plans with methodology approved by the Florida Department of Economic Opportunity).

Determining County Shelter Capacities. County shelter capacity data for all 67 counties were updated by local emergency management agencies through 2011. Since 1995, Florida has been implementing ARC 4496 hurricane evacuation shelter criteria and Florida's *Model Hurricane Evacuation Shelter Selection Guidelines*. Therefore, based upon subsequent results of regional and county hurricane evacuation shelter surveys, local emergency management agencies were requested to provide shelter inventory capacities based on those facilities that met the required ARC 4496 criteria, and separately those facilities that did not.

Those facilities that have not yet been surveyed, and therefore have not yet been documented to meet the above standards, were designated as facilities not meeting the ARC 4496 criteria. The Division has standardized a consistent methodology of calculating shelter capacities across the state for the purpose of this Plan. For each shelter, a net square footage for the building was derived from the Florida Department of Education's FISH database, including only those room types listed in Appendix H of this Plan. See Appendix H. Then, each room's square footage was multiplied by a usability factor based on room type. This generated a "dormitory" or square footage area that is usable as clear shelter space. This figure was then divided by 20 square feet per person for general population risk shelters and 60 square feet per client for special needs risk shelters. These are the square footages and capacities used to calculate the Hurricane evacuation shelter deficit reduction in this Plan.

The Division recognizes that many counties have local preferences and practices that may further limit usage of buildings. For example, one county may choose to utilize only hallways, gyms or cafeterias, even though the rest of the building (i.e. classrooms) also meets ARC 4496 criteria. In some cases, the limiting factor is the number of available staff, i.e., they can staff for only 500 people in a given location, even though they have space for many more. Also the local shelter capacity at a specific building may exceed local need. In recognition of these and other variances, the Division has included a column titled "Local Planned Usage" in the individual county tables in Appendix A. However, it should be noted that the capacities calculated per the method in the paragraph above, still exist and could, in an emergency, be utilized and therefore are counted toward elimination of the regional and county hurricane evacuation shelter space deficit.

Determining County Shelter Demand. The hurricane evacuation shelter demand percentage for each county reflects the percentage of a county's vulnerable population that is projected to seek public shelter. These percentages are based on the conclusions of the behavioral analyses conducted for each of the regional evacuation studies. The analyses utilize survey and statistical methodologies to estimate behavioral responses to various hurricane scenarios. It is important to note that results obtained by a survey do NOT always correlate to actual behavior. What people say they will do during a "blue sky" survey often differs from actual behavior, which is influenced by a number of factors. Strength of storm/perception of risk, time since most recent significant disaster, and previous experience (or lack of) with tropical weather are just a few factors that influence a person's decision to evacuate or seek shelter. Hence, shelter demand may fluctuate over time. All estimates are based on a worst case storm scenario and optimal compliance with local evacuation orders.

Most of the behavioral analyses in the state have been prepared on a regional basis by Hazards Management Group (HMG) and are therefore a consistent benchmark relative to the survey methodologies and statistical applications. The public shelter use percentages in the behavioral section of the SRES are combined with local income characteristics in the hurricane risk area (two important variables in determining public shelter use) to calculate shelter demand numbers.

For this Plan, these data served as the basis for estimating the shelter demand for coastal and inland counties between 2014 and 2019. The same methodology for projecting the vulnerable population during this period was used to calculate the estimated shelter demand figures for those years. The Shelter Demand for the Persons with Special Needs (PSN) is also from the 2012 SESP/2010 SRES with adjustments recommended by county emergency managements.

3.2 Location and Square Footage of Existing and Needed Shelters

Tables 3-1 and 3-2 below provide information regarding location and shelter occupant capacity of both existing and needed hurricane evacuation shelters (i.e., risk shelters) for each of the 67 Florida counties. The tables also show which regions of the state have a deficit of hurricane evacuation shelter space.

3.3 Pet-Friendly Shelter Availability

A recurrent concern noted during past hurricanes is the need to provide shelters for domestic companion animals (pets). In many cases, pet-owners are unwilling to go to shelters during hurricanes due to the lack of facilities to keep their pets. Most shelters will only allow service animals. In some counties provisions have been made at local Agricultural Centers for horses and large animals. In a few cases, rooms (e.g., locker rooms) were set aside in hurricane evacuation shelters for pets that were brought anyway. Pursuant to §252.385(2)(b), Fla. Stat., this Plan includes information on the availability of shelters that accept pets.

Statewide, 38 counties provide a limited number of pet-friendly hurricane evacuation shelters that meet minimum hurricane safety criteria (i.e., ARC 4496). The pet-friendly shelters have a total human occupant capacity of 71,765 spaces. These pet-friendly shelters are designated with an "A" under the column titled: "General (G), PSN (P), Pet-Friendly (A)" in Appendix A: "List of Hurricane Evacuation Shelters by County, Location and Capacity." It should be noted that more than 16,000 of the statewide total of 71,765 spaces are located in Bay County. Another 9 counties indicate they have designated pet-friendly hurricane evacuation shelters, but they do not meet minimum hurricane safety criteria.

There are 29 counties with no plan to designate pet-friendly shelters.

Figure 3-2 provides a summary of the counties with designated pet-friendly shelters.

NOTE: For clarification, the Division defines "Pet-Friendly Shelters" as public shelters that have made arrangements to accept pets. Normally this includes setting aside separate areas within the public shelter or adjacent facilities with cages to control pets and isolate them from the sheltering public. Those shelters that are only for pets (not accompanied by owners) are classified as "Pet Storage Facilities" and not included as Pet Friendly Shelters.

Figure 3-2. Florida Counties with Designated Pet-Friendly Shelters

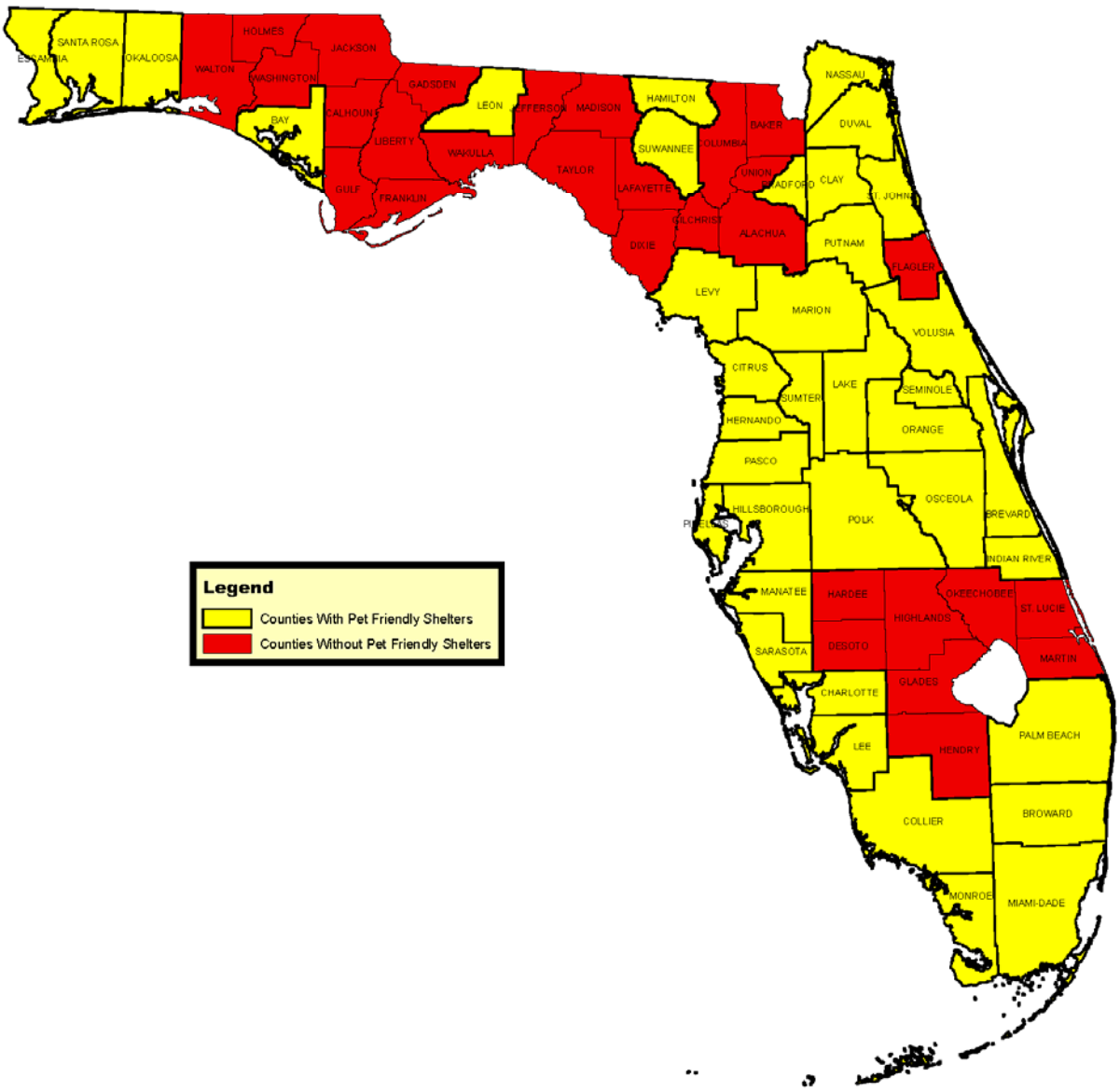


Table 3-1 (1)

RPC Region #	County	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2014 Category 5 Shelter Demand In People	2019 Category 5 Shelter Demand In People	2014 Risk Shelter Capacity In People	2014 Shelter Surplus/ Deficit in People	2019 Shelter Surplus/ Deficit in People	2014 Category 5 Shelter Demand In Clients	2019 Category 5 Shelter Demand In Clients	2014 Risk Shelter Capacity In Clients	2014 Shelter Surplus/ Deficit in Clients	2019 Shelter Surplus/ Deficit in Clients
1	Bay	7,328	7,822	15,805	8,477	7,983	337	338	301	(36)	(37)
1	Escambia	12,724	12,401	24,018	11,294	11,617	322	323	317	(5)	(6)
1	Holmes	1,026	1,057	1,332	306	275	62	62	38	(24)	(24)
1	Okaloosa	5,622	5,639	12,627	7,005	6,988	82	82	82	0	(0)
1	Santa Rosa	6,685	7,638	9,942	3,257	2,304	51	51	940	889	889
1	Walton	2,035	2,836	9,205	7,170	6,369	56	56	92	36	36
1	Washington	1,476	1,549	4,636	3,160	3,087	100	101	144	44	43
Region 1 Subtotals		**36,896**	**38,942**	**77,565**	**40,669**	**38,623**	**1,010**	**1,013**	**1,914**	**904**	**901**
2	Calhoun	1,060	1,053	172	(888)	(881)	100	101	0	(100)	(101)
2	Franklin	413	417	0	(413)	(417)	263	268	0	(263)	(268)
2	Gadsden	2,437	2,560	4,059	1,622	1,499	462	474	0	(462)	(474)
2	Gulf	506	561	460	(46)	(101)	214	218	0	(214)	(218)
2	Jackson	3,530	3,555	3,831	301	276	194	195	33	(161)	(162)
2	Jefferson	283	272	809	526	537	137	142	0	(137)	(142)
2	Leon	2,713	2,767	22,398	19,685	19,631	1,425	1,453	705	(720)	(748)
2	Liberty	214	206	1,151	937	945	130	138	76	(54)	(62)
2	Wakulla	943	990	800	(143)	(190)	100	105	0	(100)	(105)
Region 2 Subtotals		**12,099**	**12,380**	**33,680**	**21,581**	**21,300**	**3,025**	**3,095**	**814**	**(2,211)**	**(2,281)**
3	Alachua	13,137	13,203	9,088	(4,049)	(4,115)	1,070	1,075	500	(570)	(575)
3	Bradford	1,282	1,316	1,481	199	165	194	197	214	20	17
3	Columbia	3,844	3,968	4,337	493	369	426	431	0	(426)	(431)
3	Dixie	1,502	1,581	826	(676)	(755)	148	149	0	(148)	(149)
3	Gilchrist	936	979	3,027	2,091	2,048	70	70	102	32	32
3	Hamilton	921	936	1,621	700	685	82	83	75	(7)	(8)
3	Lafayette	560	578	587	27	9	14	14	60	46	46
3	Madison	1,239	1,260	4,208	2,969	2,948	75	76	28	(47)	(48)
3	Suwannee	2,852	2,939	3,484	632	545	78	78	50	(28)	(28)
3	Taylor	1,523	1,558	3,626	2,103	2,068	72	72	0	(72)	(72)
3	Union	951	957	1,251	300	294	61	61	33	(28)	(28)
Region 3 Subtotals		**28,747**	**29,274**	**33,536**	**4,789**	**4,262**	**2,290**	**2,307**	**1,062**	**(1,228)**	**(1,245)**

Table 3-1 (2)

RPC Region #	County	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2014 Category 5 Shelter Demand In People	2019 Category 5 Shelter Demand In People	2014 Risk Shelter Capacity In People	2014 Shelter Surplus/ Deficit in People	2019 Shelter Surplus/ Deficit in People	2014 Category 5 Shelter Demand In Clients	2019 Category 5 Shelter Demand In Clients	2014 Risk Shelter Capacity In Clients	2014 Shelter Surplus/ Deficit in Clients	2019 Shelter Surplus/ Deficit in Clients
4	Baker	2,698	2,698	2,663	(35)	(35)	75	75	0	(75)	(75)
4	Clay	10,739	10,782	6,949	(3,790)	(3,833)	500	502	152	(348)	(350)
4	Duval	59,275	59,690	44,248	(15,027)	(15,442)	2,193	2,208	2,377	184	169
4	Flagler	6,493	8,054	5,731	(762)	(2,323)	354	356	122	(232)	(234)
4	Nassau	4,018	4,306	4,251	233	(55)	185	186	156	(29)	(30)
4	Putnam	6,695	6,696	1,876	(4,819)	(4,820)	81	81	144	63	63
4	Saint Johns	9,502	10,769	10,593	1,091	(176)	510	512	766	256	254
Region 4 Subtotals		**99,420**	**102,995**	**76,311**	**(23,109)**	**(26,684)**	**3,898**	**3,920**	**3,717**	**(181)**	**(203)**
5	Citrus	12,467	13,660	3,647	(8,820)	(10,013)	56	56	128	72	72
5	Hernando	16,632	16,695	9,973	(6,659)	(6,723)	710	713	1,414	704	701
5	Levy	4,308	4,721	2,473	(1,835)	(2,248)	19	19	136	117	117
5	Marion	21,235	23,544	12,227	(9,008)	(11,317)	107	108	852	745	744
5	Sumter	12,606	14,784	544	(12,062)	(14,240)	42	42	0	(42)	(42)
Regiona 5 Subtotals		**67,248**	**73,404**	**28,864**	**(38,384)**	**(44,541)**	**934**	**938**	**2,530**	**1,596**	**1,592**
6	Brevard	32,586	32,684	40,114	7,528	7,430	2,098	2,104	2,330	232	226
6	Lake	25,231	29,504	26,103	872	(3,401)	384	390	314	(70)	(76)
6	Orange	26,320	29,102	29,806	3,486	704	220	222	1,402	1,182	1,180
6	Osceola	7,309	8,501	24,652	17,343	16,151	37	37	1,331	1,294	1,294
6	Seminole	10,332	10,351	15,593	5,261	5,242	1,100	1,102	300	(800)	(802)
6	Volusia	38,008	53,638	20,436	(17,572)	(33,202)	241	243	2,238	1,997	1,995
Region 6 Subtotals		**139,786**	**163,780**	**156,704**	**16,918**	**(7,076)**	**4,080**	**4,098**	**7,915**	**3,835**	**3,817**
7	Desoto	3,159	3,245	2,542	(617)	(703)	120	123	211	91	88
7	Hardee	2,167	2,474	9,326	7,159	6,852	284	290	110	(174)	(180)
7	Highlands	8,104	8,573	8,513	409	(60)	262	264	75	(187)	(189)
7	Okeechobee	5,295	5,470	1,822	(3,473)	(3,648)	1,271	1,313	0	(1,271)	(1,313)
7	Polk	26,570	28,653	38,873	12,303	10,220	2,338	2,368	1,063	(1,275)	(1,305)
Region 7 Subtotals		**45,295**	**48,415**	**61,076**	**15,781**	**12,661**	**4,275**	**4,358**	**1,459**	**(2,816)**	**(2,899)**

RPC Region #	County	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2014 Category 5 Shelter Demand In People	2019 Category 5 Shelter Demand In People	2014 Risk Shelter Capacity In People	2014 Shelter Surplus/ Deficit in People	2019 Shelter Surplus/ Deficit in People	2014 Category 5 Shelter Demand In Clients	2019 Category 5 Shelter Demand In Clients	2014 Risk Shelter Capacity In Clients	2014 Shelter Surplus/ Deficit in Clients	2019 Shelter Surplus/ Deficit in Clients
8	Hillsborough	47,195	50,992	89,723	42,528	38,731	2,446	2,455	2,480	34	25
8	Manatee	25,000	25,175	32,498	7,498	7,323	1,000	1,007	933	(67)	(74)
8	Pasco	25,327	26,634	29,099	3,772	2,465	2,810	2,835	1,173	(1,637)	(1,662)
8	Pinellas	42,370	42,815	30,973	(11,397)	(11,842)	4,000	4,042	2,268	(1,732)	(1,774)
Region 8 Subtotals		**139,892**	**145,616**	**182,293**	**42,401**	**36,677**	**10,256**	**10,339**	**6,854**	**(3,402)**	**(3,485)**
9	Charlotte	11,474	11,884	0	(11,474)	(11,884)	1,352	1,362	0	(1,352)	(1,362)
9	Collier	25,568	22,459	5,784	(19,784)	(16,675)	1,812	1,822	0	(1,812)	(1,822)
9	Glades	1,392	1,531	686	(706)	(845)	16	16	110	94	94
9	Hendry	3,721	4,115	6,263	2,542	2,148	225	227	0	(225)	(227)
9	Lee	64,000	64,243	0	(64,000)	(64,243)	4,100	4,116	0	(4,100)	(4,116)
9	Sarasota	28,209	33,066	13,341	(14,868)	(19,725)	3,076	3,103	1,616	(1,460)	(1,487)
Region 9 Subtotals		**134,364**	**137,298**	**26,074**	**(108,290)**	**(111,224)**	**10,581**	**10,646**	**1,726**	**(8,855)**	**(8,920)**
10	Indian River	5,805	5,950	8,256	2,451	2,306	501	514	582	81	68
10	Martin	4,246	4,339	20,061	15,815	15,722	352	360	1,369	1,017	1,009
10	Palm Beach	28,467	28,809	70,679	42,212	41,870	2,520	2,550	800	(1,720)	(1,750)
10	Saint Lucie	5,982	6,881	16,885	10,903	10,004	2,423	2,484	500	(1,923)	(1,984)
Region 10 Subtotals		**44,500**	**45,980**	**115,881**	**71,381**	**69,901**	**5,796**	**5,907**	**3,251**	**(2,545)**	**(2,656)**
11	Broward	25,907	27,058	58,955	33,048	31,897	1,277	1,280	1,550	273	270
11	Miami-Dade	59,177	61,522	73,162	13,985	11,640	2,717	2,725	3,308	591	583
11	Monroe	2,771	2,936	602	(2,169)	(2,334)	300	300	121	(179)	(179)
Region 11 Subtotals		**87,855**	**91,516**	**132,719**	**44,864**	**41,203**	**4,294**	**4,305**	**4,979**	**685**	**674**
TOTALS		**836,102**	**889,601**	**924,703**	**88,601**	**35,102**	**50,439**	**50,925**	**36,221**	**(14,218)**	**(14,704)**

Table 3-2 (1)

RPC Region #	County	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2014 Category 5 Shelter Demand In SqFt (estimated)	2019 Category 5 Shelter Demand In SqFt (estimated)	2014 Risk Shelter Capacity In SqFt	2014 Shelter Surplus/ Deficit In SqFt	2019 Shelter Surplus/ Deficit In SqFt	2014 Category 5 Shelter Demand In SqFt (estimated)	2019 Category 5 Shelter Demand In SqFt (estimated)	2014 Risk Shelter Capacity In SqFt	2014 Shelter Surplus/ Deficit In SqFt	2019 Shelter Surplus/ Deficit In SqFt
1	BAY	146,560	156,443	316,100	169,540	159,657	20,220	20,271	18,060	(2,160)	(2,211)
1	ESCAMBIA	254,480	248,027	480,360	225,880	232,333	19,320	19,359	19,020	(300)	(339)
1	HOLMES	20,520	21,132	26,640	6,120	5,508	3,720	3,745	2,280	(1,440)	(1,465)
1	OKALOOSA	112,440	112,775	252,540	140,100	139,765	4,920	4,935	4,920	0	(15)
1	SANTA ROSA	133,700	152,759	198,847	65,147	46,088	3,060	3,062	56,400	53,340	53,338
1	WALTON	40,700	56,719	184,100	143,400	127,381	3,360	3,364	5,520	2,160	2,156
1	WASHINGTON	29,520	30,984	92,720	63,200	61,737	6,000	6,050	8,640	2,640	2,591
Region 1 Totals:		**737,920**	**778,839**	**1,551,307**	**813,387**	**772,469**	**60,600**	**60,784**	**114,840**	**54,240**	**54,056**
2	CALHOUN	21,200	21,054	3,440	(17,760)	(17,614)	6,000	6,078	0	(6,000)	(6,078)
2	FRANKLIN	8,260	8,335	0	(8,260)	(8,335)	15,780	16,096	0	(15,780)	(16,096)
2	GADSDEN	48,740	51,191	81,180	32,440	29,989	27,720	28,468	0	(27,720)	(28,468)
2	GULF	10,120	11,223	9,200	(920)	(2,023)	12,840	13,071	0	(12,840)	(13,071)
2	JACKSON	70,600	71,093	76,620	6,020	5,527	11,640	11,721	1,980	(9,660)	(9,741)
2	JEFFERSON	5,660	5,444	16,180	10,520	10,736	8,220	8,508	0	(8,220)	(8,508)
2	LEON	54,260	55,340	447,960	393,700	392,620	85,500	87,180	42,300	(43,200)	(44,880)
2	LIBERTY	4,280	4,124	23,020	18,740	18,896	7,800	8,268	4,560	(3,240)	(3,708)
2	WAKULLA	18,860	19,800	16,000	(2,860)	(3,800)	6,000	6,300	0	(6,000)	(6,300)
Region 2 Totals:		**241,980**	**247,603**	**673,600**	**431,620**	**425,997**	**181,500**	**185,690**	**48,840**	**(132,660)**	**(136,850)**
3	ALACHUA	262,740	264,053	181,760	(80,980)	(82,293)	64,200	64,521	30,000	(34,200)	(34,521)
3	BRADFORD	25,640	26,328	29,620	3,980	3,292	11,640	11,795	12,840	1,200	1,045
3	COLUMBIA	76,880	79,359	86,740	9,860	7,381	25,560	25,862	0	(25,560)	(25,862)
3	DIXIE	30,040	31,610	16,520	(13,520)	(15,090)	8,880	8,969	0	(8,880)	(8,969)
3	GILCHRIST	18,720	19,570	60,540	41,820	40,970	4,200	4,229	6,120	1,920	1,891
3	HAMILTON	18,420	18,724	32,420	14,000	13,696	4,920	4,969	4,500	(420)	(469)
3	LAFAYETTE	11,200	11,559	11,740	540	181	840	843	3,600	2,760	2,757
3	MADISON	24,780	25,210	84,160	59,380	58,950	4,500	4,531	1,680	(2,820)	(2,851)
3	SUWANNEE	57,040	58,775	69,680	12,640	10,905	4,680	4,695	3,000	(1,680)	(1,695)
3	TAYLOR	30,460	31,154	72,520	42,060	41,366	4,320	4,339	0	(4,320)	(4,339)
3	UNION	19,020	19,140	25,020	6,000	5,880	3,660	3,685	1,980	(1,680)	(1,705)
Region 3 Totals:		**574,940**	**585,483**	**670,720**	**95,780**	**85,237**	**137,400**	**138,437**	**63,720**	**(73,680)**	**(74,717)**

Table 3-2 (2)

RPC Region #	County	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2014 Category 5 Shelter Demand In SqFt (estimated)	2019 Category 5 Shelter Demand In SqFt (estimated)	2014 Risk Shelter Capacity In SqFt	2014 Shelter Surplus/ Deficit In SqFt	2019 Shelter Surplus/ Deficit In SqFt	2014 Category 5 Shelter Demand In SqFt (estimated)	2019 Category 5 Shelter Demand In SqFt (estimated)	2014 Risk Shelter Capacity In SqFt	2014 Shelter Surplus/ Deficit In SqFt	2019 Shelter Surplus/ Deficit In SqFt
4	BAKER	53,960	53,953	53,260	(700)	(693)	4,500	4,523	0	(4,500)	(4,523)
4	CLAY	214,780	215,640	138,980	(75,800)	(76,660)	30,000	30,120	9,120	(20,880)	(21,000)
4	DUVAL	1,185,500	1,193,793	884,960	(300,540)	(308,833)	131,580	132,501	142,620	11,040	10,119
4	FLAGLER	129,860	161,085	114,620	(15,240)	(46,465)	21,240	21,346	7,320	(13,920)	(14,026)
4	NASSAU	80,360	86,129	85,020	4,660	(1,109)	11,100	11,133	9,360	(1,740)	(1,773)
4	PUTNAM	133,900	133,920	37,520	(96,380)	(96,400)	4,860	4,860	8,640	3,780	3,780
4	ST.JOHNS	190,040	215,389	211,860	21,820	(3,529)	30,600	30,692	45,960	15,360	15,268
Region 4 Totals:		**1,988,400**	**2,059,908**	**1,526,220**	**(462,180)**	**(533,688)**	**233,880**	**235,175**	**223,020**	**(10,860)**	**(12,155)**
5	CITRUS	249,340	273,195	72,940	(176,400)	(200,255)	3,360	3,375	7,680	4,320	4,305
5	HERNANDO	332,640	333,906	199,454	(133,186)	(134,452)	42,600	42,762	84,840	42,240	42,078
5	LEVY	86,160	94,418	49,460	(36,700)	(44,958)	1,140	1,145	8,160	7,020	7,015
5	MARION	424,700	470,889	244,540	(180,160)	(226,349)	6,420	6,452	51,120	44,700	44,668
5	SUMTER	252,120	295,677	10,880	(241,240)	(284,797)	2,520	2,528	0	(2,520)	(2,528)
Region 5 Totals:		**1,344,960**	**1,468,086**	**577,274**	**(767,686)**	**(890,812)**	**56,040**	**56,263**	**151,800**	**95,760**	**95,537**
6	BREVARD	651,720	653,674	802,280	150,560	148,606	125,880	126,258	139,800	13,920	13,542
6	LAKE	504,620	590,085	522,060	17,440	(68,025)	23,040	23,386	18,840	(4,200)	(4,546)
6	ORANGE	526,400	582,043	596,120	69,720	14,077	13,200	13,310	84,120	70,920	70,810
6	OSCEOLA	146,180	170,016	493,040	346,860	323,024	2,220	2,231	79,860	77,640	77,629
6	SEMINOLE	206,640	207,020	311,860	105,220	104,840	66,000	66,119	18,000	(48,000)	(48,119)
6	VOLUSIA	760,160	1,072,770	408,720	(351,440)	(664,050)	14,460	14,551	134,280	119,820	119,729
Region 6 Totals:		**2,795,720**	**3,275,609**	**3,134,080**	**338,360**	**(141,529)**	**244,800**	**245,854**	**474,900**	**230,100**	**229,046**
7	DESOTO	63,180	64,895	50,840	(12,340)	(14,055)	7,200	7,394	12,660	5,460	5,266
7	HARDEE	43,340	49,486	186,520	143,180	137,034	17,040	17,381	6,600	(10,440)	(10,781)
7	HIGHLANDS	162,080	171,463	170,260	8,180	(1,203)	15,720	15,830	4,500	(11,220)	(11,330)
7	OKEECHOBEE	105,900	109,401	36,440	(69,460)	(72,961)	76,260	78,777	0	(76,260)	(78,777)
7	POLK	531,400	573,052	777,460	246,060	204,408	140,280	142,104	63,780	(76,500)	(78,324)
Region 7 Totals:		**905,900**	**968,298**	**1,221,520**	**315,620**	**253,222**	**256,500**	**261,485**	**87,540**	**(168,960)**	**(173,945)**

Table 3-2 (3)

RPC Region #	County	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2014 Category 5 Shelter Demand In SqFt (estimated)	2019 Category 5 Shelter Demand In SqFt (estimated)	2014 Risk Shelter Capacity In SqFt	2014 Shelter Surplus/ Deficit In SqFt	2019 Shelter Surplus/ Deficit In SqFt	2014 Category 5 Shelter Demand In SqFt (estimated)	2019 Category 5 Shelter Demand In SqFt (estimated)	2014 Risk Shelter Capacity In SqFt	2014 Shelter Surplus/ Deficit In SqFt	2019 Shelter Surplus/ Deficit In SqFt
8	HILLSBOROUGH	943,900	1,019,834	1,794,460	850,560	774,626	146,760	147,318	148,800	2,040	1,482
8	MANATEE	500,000	503,500	649,960	149,960	146,460	60,000	60,420	55,980	(4,020)	(4,440)
8	PASCO	506,540	532,685	581,980	75,440	49,295	168,600	170,084	70,380	(98,220)	(99,704)
8	PINELLAS	847,400	856,300	619,460	(227,940)	(236,840)	240,000	242,520	136,080	(103,920)	(106,440)
Region 8 Totals:		**2,797,840**	**2,912,320**	**3,645,860**	**848,020**	**733,540**	**615,360**	**620,341**	**411,240**	**(204,120)**	**(209,101)**
9	CHARLOTTE	229,480	237,677	0	(229,480)	(237,677)	81,120	81,728	0	(81,120)	(81,728)
9	COLLIER	511,360	449,181	115,680	(395,680)	(333,501)	108,720	109,318	0	(108,720)	(109,318)
9	GLADES	27,840	30,619	13,720	(14,120)	(16,899)	960	962	6,600	5,640	5,638
9	HENDRY	74,420	82,303	125,260	50,840	42,957	13,500	13,612	0	(13,500)	(13,612)
9	LEE	1,280,000	1,284,868	0	(1,280,000)	(1,284,868)	246,000	246,935	0	(246,000)	(246,935)
9	SARASOTA	564,180	661,319	266,820	(297,360)	(394,499)	184,560	186,184	96,960	(87,600)	(89,224)
Region 9 Totals:		**2,687,280**	**2,745,967**	**521,480**	**(2,165,800)**	**(2,224,487)**	**634,860**	**638,739**	**103,560**	**(531,300)**	**(535,179)**
10	INDIAN RIVER	116,100	119,010	165,120	49,020	46,111	30,060	30,812	34,920	4,860	4,109
10	MARTIN	84,920	86,785	401,220	316,300	314,435	21,120	21,585	82,140	61,020	60,555
10	PALM BEACH	569,340	576,175	1,413,580	844,240	837,405	151,200	153,014	48,000	(103,200)	(105,014)
10	ST.LUCIE	119,640	137,629	337,700	218,060	200,072	145,380	149,015	30,000	(115,380)	(119,015)
Region 10 Totals:		**890,000**	**919,598**	**2,317,620**	**1,427,620**	**1,398,022**	**347,760**	**354,425**	**195,060**	**(152,700)**	**(159,365)**
11	BROWARD	518,140	541,169	1,179,100	660,960	637,931	76,620	76,773	93,000	16,380	16,227
11	MIAMI-DADE	1,183,540	1,230,437	1,463,240	279,700	232,803	163,020	163,509	198,480	35,460	34,971
11	MONROE	55,420	58,713	12,040	(43,380)	(46,673)	18,000	18,022	7,260	(10,740)	(10,762)
Region 11 Totals:		**1,757,100**	**1,830,319**	**2,654,380**	**897,280**	**824,061**	**257,640**	**258,304**	**298,740**	**41,100**	**40,436**
TOTALS		**16,722,040**	**17,792,029**	**18,494,061**	**1,772,021**	**702,033**	**1,008,780**	**1,018,500**	**724,420**	**(284,360)**	**(294,080)**

4.0 TYPES OF PUBLIC FACILITIES THAT SHOULD COMPLY WITH PUBLIC SHELTER DESIGN CRITERIA

By statute, all appropriate public facilities are subject to being used as public hurricane evacuation shelters in a declared state or local emergency. See §252.385, Fla. Stat. Therefore, any appropriate new public facility should include emergency shelter criteria. This includes not only public educational facilities, but also certain types of state and local government facilities. In general, facilities that are designed for public assembly, either as a primary or auxiliary use, may be appropriate for use as public shelters during an emergency. At this time, only public educational facilities are subject to the EHPA criteria by statute and code. This is primarily due to the fact that public educational facilities account for more than 99 percent of current public hurricane evacuation shelter space, and relatively few other state and local facilities are appropriate for use as public shelters.

The public shelter space may be located in a single building or a campus or office center with multiple buildings, placed in a single large room or multiple medium sized rooms in close proximity to each other, or in one or more stories of multistory buildings. Preferably the buildings will have a means of inside circulation and convenient access to toilets and hand washing facilities.

To determine if a proposed new public facility should be subject to the EHPA criteria, regardless of non-educational function or agency with ownership, the proposed facility should be reviewed based upon the exemption criteria given in Section 2.2 of this Plan. Facilities not subject to an exemption may be appropriate for use as public hurricane evacuation shelters. The decision to incorporate emergency shelter criteria into a new public facility must be coordinated with the local emergency management agency(s) or the Division.

4.1 Public Schools and Community Colleges

District public schools (K-12) are the primary source of public hurricane evacuation shelter space in Florida, accounting for about 97 percent of current capacity. This is due to the fact that schools are widely distributed in populated areas, school facilities are designed for large assembly occupancies with many inherent mass care features (e.g., adequate quantity of toilets, dining/feeding areas, etc.), access to the facilities can be coordinated through a single local agency, etc. The types of school buildings that are potentially appropriate for use as public shelters include gymnasiums, cafeteria/dining, multipurpose, auditoriums and certain classroom buildings.

Community Colleges account for only about one (1) percent of current public shelter capacity. Community Colleges are regionally distributed, and potentially located in areas with high demands for public hurricane evacuation shelter space. As with K-12 public schools, Community Colleges are normally designed for large assembly occupancies and possess many inherent mass care features. The types of college buildings that are potentially appropriate for use as public shelters include gymnasiums, cafeterias, multipurpose facilities, auditoriums and certain classroom buildings.

4.2 Charter Schools

Charter schools appear to have a general exemption from meeting many of the requirements of K-12 public schools; reference §1002.33(16)(a), Fla. Stat. However, §1002.33(18), Fla. Stat. requires charter schools to utilize facilities which comply with the generally applicable provisions of the Florida Building Code, and may opt to comply with the SREF.

Charter schools may be used to expand the capacity of the public school system. Therefore, under some circumstances, a charter school may replace construction of a new public school facility within a geographic area of a county or region where there is significant demand for public hurricane evacuation shelter space. In this situation, a new public school facility would be lawfully required by statute and code to incorporate the EHPA. Charter schools are exempt from EHPA which therefore limits the ability of both the board and emergency management agencies to reduce the public hurricane evacuation shelter space deficit.

Charter schools may be eligible to receive state capital outlay, local capital millage, and impact fee funding to support construction, operation, maintenance, repair or other purposes, and such facilities, when located on district property, are subject to reversion to the district school board in the event that a charter school terminates operation. Given the public investment in the facilities, and the magnitude of the hurricane evacuation shelter space deficit in certain regions and counties, charter schools, when possible, should include the EHPA.

The following are factors to be considered in determining if a proposed new construction charter school facility should incorporate the EHPA: 1) are local capital millage or impact fee funds supporting the construction project; 2) does the project meet the definition of "new construction" as defined in §1013.01(14), Fla. Stat. or s. 423.5.8, *Florida Building Code--Building*; 3) would the facility be subject to an exemption per §1013.372(1), Fla. Stat. or s. 423.25, *Florida Building Code--Building* due its location, size or other characteristic; 4) would the facility be subject to reversion to the district board if charter school operations terminate; or 5) will the facility be subject to use as a public hurricane evacuation shelter per §252.385(4)(a), Fla. Stat., because it is owned or leased by a state or local governmental entity.

4.3 State Universities

State university facilities account for only about one (1) percent of current public hurricane evacuation shelter capacity. Unlike K-12 public schools and Community Colleges, state university campuses may not be as widely distributed, though several are potentially located in areas with high demands for public hurricane evacuation shelter space (e.g., Florida International University, University of South Florida, etc.) Main campuses and some satellite campuses may have several appropriate buildings concentrated in one (or more) proximate geographic area. This concentration of shelter spaces reduces staffing and logistical resource demands of a sheltering operation.

State university facilities are typically designed for large assembly occupancies, with many having inherent mass care features. The types of university buildings that are potentially appropriate for use as public shelters include gymnasiums, field houses and sports arenas, cafeterias or dining rooms, multipurpose facilities, auditoriums and certain classroom buildings.

State universities must consider two separate populations when developing their public shelter strategies: 1) campus staff, faculty and their families, and students (both commuters and residential); and 2) the general public. University facilities may be designated for sole use by one population, or concurrent use by both populations, at the discretion of the university board with the concurrence of local emergency management agency or the Division. Residential facilities are not normally subject to the EHPA, but incorporation of the criteria into new residential housing or dormitories (or portions thereof) will free up additional hurricane evacuation shelter space for the general public in appropriate non-residential facilities.

4.4 State and Local Public Facilities

Local public facilities account for about one (1) percent of current public hurricane evacuation shelter capacity. Given their administrative function (and essential emergency function of certain facilities) most state-owned, county-owned and municipally-owned facilities are not appropriate for use as public hurricane evacuation shelters. Administrative office and support areas, data and word processing rooms and areas, record vaults, etc., are exempt from the EHPA. However, certain other types of public facilities may be appropriate, such as community or civic centers, meeting halls, auditoriums, exhibition halls, sports arenas, conference or training centers, and other public assembly facilities.

5.0 RECOMMENDED SOURCES OF FUNDING

School districts have generally been reporting that the construction cost premium for incorporating the EHPA code provisions can range from less than one (1) to as much as 20 percent, though the average is about four (4) percent. For most new facilities, this appears to translate into a construction cost premium of less than $900,000. These are not necessarily inconsequential costs that must be borne by State and local governments. Therefore, pursuant to §1013.372(2), Fla. Stat., the Division recommends use of existing state capital outlay to fund the additional cost of constructing hurricane evacuation shelters in public schools.

5.1 Public Schools, Community Colleges and University Facilities

Historically, there have been a variety of state capital outlay funding sources, such as Public Education Capital Outlay (PECO). For illustration purposes, Table 5-1 provides a summary of estimated PECO funds that have been distributed to local school boards from Fiscal Year 1997/98, when the EHPA requirement was promulgated into code, through Fiscal Year 2013/14. The PECO funding information was provided by the Department of Education. Universities and Community Colleges are not included in Table 5-1 due to the fact that only about two (2) percent of the statewide public hurricane evacuation shelter capacity is located on their campuses. The ratio column provides a means of comparing EHPA production versus PECO funds distributed over the past 17 years that the EHPA has been a code requirement. The average PECO funds distributed per EHPA space created was $5,827. School boards with comparison values near or below this average were more productive than those that are significantly higher than either the average or have a zero (0) value.

Table 5-1. Estimate of PECO Funds Distributed to School Districts 1997-2014
Comparison to EHPA Spaces Created

County	New Constructions PECO funds, $	Cumulative EHPA Spaces @ 20 sf each	Ratio of PECO Funds Received to EHPA Spaces Built, $
ALACHUA	$13,689,553	2,448	$5,592
BAKER	$3,303,969	306	$10,797
BAY	$12,743,041	1,558	$8,179
BRADFORD	$1,879,416	0	$0
BREVARD	$34,339,175	14,823	$2,317
BROWARD	$184,443,426	62,780	$2,938
CALHOUN	$964,478	172	$5,607
CHARLOTTE	$12,165,585	0	$0
CITRUS	$10,910,548	384	$28,413
CLAY	$40,712,028	3,185	$12,782
COLLIER	$40,485,589	0	$0
COLUMBIA	$5,575,730	4,337	$1,286
DESOTO	$2,414,272	453	$5,330
DIXIE	$1,388,354	0	$0
DUVAL	$50,761,462	16,725	$3,035
ESCAMBIA	$16,956,713	1,995	$8,500
FLAGLER	$25,476,339	969	$26,291
FRANKLIN	$507,654	0	$0
GADSDEN	$3,317,022	2,142	$1,549
GILCHRIST	$1,604,565	0	$0
GLADES	$823,387	608	$1,354
GULF	$1,524,961	228	$6,688
HAMILTON	$983,128	1,345	$731
HARDEE	$2,890,964	9,496	$304
HENDRY	$3,592,162	1,000	$3,592
HERNANDO	$25,249,589	9,186	$2,749
HIGHLANDS	$7,597,367	6,137	$1,238
HILLSBOROUGH	$145,844,289	67,199	$2,170
HOLMES	$1,484,783	1,267	$1,172
INDIAN RIVER	$11,338,760	0	$0
JACKSON	$4,645,987	3,431	$1,354
JEFFERSON	$615,491	809	$761
LAFAYETTE	$951,389	0	$0
LAKE	$45,040,584	24,737	$1,821
LEE	$70,798,993	0	$0
LEON	$16,774,739	1,245	$13,474
LEVY	$4,033,620	276	$14,615
LIBERTY	$1,392,240	762	$1,827
MADISON	$1,265,618	0	$0
MANATEE	$31,819,893	25,562	$1,245
MARION	$37,872,640	6,558	$5,775
MARTIN	$13,407,274	12,185	$1,100
MIAMI-DADE	$180,055,515	28,727	$6,268
MONROE	$3,304,335	0	$0
NASSAU	$9,547,176	4,393	$2,173
OKALOOSA	$11,048,934	2,025	$5,456
OKEECHOBEE	$3,724,303	1,011	$3,684
ORANGE	$123,498,036	31,482	$3,923
OSCEOLA	$61,043,263	7,975	$7,654
PALM BEACH	$113,927,836	48,486	$2,350
PASCO	$74,299,046	18,951	$3,921
PINELLAS	$61,320,950	10,601	$5,784
POLK	$86,231,095	39,414	$2,188
PUTNAM	$5,079,243	1,243	$4,086
SAINT JOHNS	$42,032,738	8,241	$5,100
SAINT LUCIE	$56,302,558	4,388	$12,831
SANTA ROSA	$22,306,259	5,943	$3,753
SARASOTA	$34,599,582	11,478	$3,014
SEMINOLE	$37,076,435	1,000	$37,076
SUMTER	$2,685,199	200	$13,426
SUWANNEE	$4,300,520	3,484	$1,234
TAYLOR	$1,923,026	2,424	$793
UNION	$1,357,200	411	$3,302
VOLUSIA	$34,271,387	9,793	$3,500
WAKULLA	$5,581,785	800	$6,977
WALTON	$5,739,252	5,269	$1,089
WASHINGTON	$3,126,912	1,459	$2,143
Statewide Total	**$1,877,969,362**	**533,506**	**$5,827**

Note - Spaces shown have been adjusted to reflect Persons with Special Needs (PSN) space capacity at an equivalent rate of three (3) times the general population spaces (i.e., 1 PSN space @ 60 sf each = 3 GP spaces @ 20 sf each). Note: $ is an average of the ratios, less those with a value of "$0".

6.0 STATEWIDE PROGRESS TOWARD ELIMINATING THE PUBLIC HURRICANE EVACUATION SHELTER SPACE DEFICIT

The Florida Division of Emergency Management is charged under §252.385, Fla. Stat. to administer a statewide program to eliminate the deficit of "safe" hurricane evacuation shelter space. The Division has taken several steps to implement the program. First, by conducting a survey of existing buildings, both public and private, to identify suitable shelter capacity. Second, where cost effective (and practical), support mitigation and retrofitting of facilities to increase shelter capacity. Third, require construction of new educational facilities to meet the EHPA code provisions. Fourth, conduct research to clearly identify demand. And fifth, improve public information/education to reduce shelter demand from evacuees not required to evacuate or "shadow" evacuations.

Since 1995, the Division has been performing a survey of existing designated and potential hurricane evacuation shelters. The initial findings of the survey were not encouraging. The vast majority of the designated hurricane evacuation shelters were in buildings that did not appear to meet the intent of ARC 4496 hurricane safety criteria. As examples, the pre-survey designated hurricane evacuation shelters rarely had adequate (if any) window protection (83 percent without protection), and were often constructed with long span roofs (41 percent with long span) and unreinforced masonry walls (43 percent with unreinforced masonry). The initial results of the survey began, for the first time, to quantify the actual condition of Florida's public hurricane evacuation shelter inventory, instead of relying on anecdotal concerns that had been expressed for more than 20 years. However, during the survey process, hundreds of thousands of spaces were identified that only required minor retrofitting (e.g., window protection) to meet the ARC 4496 criteria.

Between 1995 and 2000, the reported hurricane evacuation shelter space deficit increased considerably; from about 361,000 spaces in 1996 to more than 1.5 million in 2000. During this time-frame, less than 200,000 hurricane evacuation shelter spaces that met minimum hurricane evacuation shelter safety criteria could be documented. The spaces that could be documented were located primarily in the southeastern and east-central coastal regions of the state. This capacity was principally the result of post-Hurricane Andrew HMGP funding of public school window protection projects. Other than federal HMGP funds, no significant source of funding had been identified to support the minor retrofit projects being documented during the survey process.

Concurrently, §235.26(9)(a), Fla. Stat. (superseded by §1013.372(1), Fla. Stat.) stated that all new educational facilities for which a design contract was entered into after July 1, 1995 were required to incorporate the public shelter design criteria. However, the criteria did not become effective until April 28, 1997. It is not unusual for there to be a three-year delay between promulgation of a building code (or rule) and availability of the first group of compliant facilities. Therefore, minimal progress was made prior to 2000 via construction of new public schools to the EHPA code provisions.

By 2000, the reported hurricane evacuation shelter space deficit peaked as the strategy originally directed by Chapter 93-211, Laws of Florida, began to produce results. As a benchmark, the 2000 Plan reported that Florida had a statewide hurricane

evacuation shelter space deficit of more than 1.5 million spaces. This reported deficit affected every region of the state, but especially the southern and central regions of the peninsula. This did not imply that in any given storm that 1.5 million evacuees would simultaneously seek public shelter, but reflected the State's cumulative hurricane evacuation shelter space deficit. State and local emergency managers and other public officials prefer that persons ordered to evacuate for a hurricane stay within their home county or region, and not evacuate long distances. The 2000 Plan's published statewide and regional deficits served to quantify the challenge that lay ahead.

In 1999, the State Legislature appropriated more than $2.2 million to support a hurricane evacuation shelter retrofitting initiative. The appropriation stipulated that the funds be used to shutter school buildings for use as hurricane evacuation shelters. The Division used the *1999 Shelter Retrofit Report* to identify and prioritize projects to receive the funds. A total of 58 projects were selected, which created an estimated 34,928 spaces. In 2000, the State Legislature appropriated an additional $18 million (combined Federal, State and local funds) to complete the projects listed in the *1999 Shelter Retrofit Report*. The 2000 appropriation included funds from the Hurricane(s) Floyd and Irene (Federal HMGP declaration), which were earmarked to support the state's effort to reduce the deficit of hurricane evacuation shelter space.

Since 1995, through Federal, State, and local retrofitting of appropriate facilities, Florida has created a total of 397,684 public hurricane evacuation shelter spaces. The "Retrofitted / Mitigated Capacity Gained" column of Table 6-1 demonstrates county-by-county progress toward eliminating the hurricane evacuation shelter space deficit by retrofitting appropriate facilities to meet ARC 4496. Retrofitted facilities account for about 41 percent of the state's total capacity of ARC 4496 hurricane evacuation shelter spaces. The majority of this retrofit capacity has been created since 1999. Though regions and counties with the greatest deficits received priority for available retrofit funds, there has been a more widespread distribution of the retrofit funds due to the statewide nature of the deficit. Some of the retrofitted facilities have less than preferred mass care characteristics (e.g., inconveniently located toilet facilities, etc.), but the retrofit program produced a rapid improvement in the safety of Florida's hurricane evacuation shelter inventory.

Creation of hurricane evacuation shelter capacity through construction of new school facilities to the EHPA criteria has also increased since 1999. Local emergency management and school board officials have reported that 499,604 EHPA shelters spaces have been created. The "EHPA Capacity Gained" column of Table 6-1 demonstrates county-by-county progress toward eliminating the hurricane evacuation shelter space deficit via EHPA construction. The application of the EHPA criteria has been inconsistent across the state, with several counties reporting construction of relatively few (if any) EHPA's. EHPA spaces account for about 52 percent of the state's total capacity of ARC 4496 hurricane evacuation shelter spaces. However, as with any program, "institutionalization" takes time to evolve, and progress is being made.

Some 63,631 spaces were identified through surveys as meeting ARC 4496 guidelines ("as-is") without further retrofitting needed. These facilities, however, did not meet all the EHPA code requirements. These Pre-Mitigation ARC 4496 spaces account for about 6 percent of the state's total spaces.

TABLE 6-1 Hurricane Evacuation Shelter Spaces Identified Since 1995

Totals Per County	Pre-Mitigation ARC 4496 Capacity (persons)	EHPA Capacity Gained (persons)	Retrofitted / Mitigated Capacity Gained (persons)	Total ARC 4496 Spaces
ALACHUA	133	1,910	7,545	9,588
BAKER	0	306	2,357	2,663
BAY	0	956	15,150	16,106
BRADFORD	0	0	1,695	1,695
BREVARD	1,566	12,063	28,815	42,444
BROWARD	500	60,005	0	60,505
CALHOUN	0	172	0	172
CHARLOTTE	0	0	0	0
CITRUS	0	128	3,647	3,775
CLAY	0	2,985	4,116	7,101
COLLIER	0	0	5,784	5,784
COLUMBIA	0	4,337	0	4,337
DESOTO	0	151	2,602	2,753
DIXIE	0	0	826	826
DUVAL	1,154	14,889	30,582	46,625
ESCAMBIA	3,435	1,995	18,905	24,335
FLAGLER	3,191	725	1,937	5,853
FRANKLIN	0	0	0	0
GADSDEN	0	2,142	1,917	4,059
GILCHRIST	0	0	3,129	3,129
GLADES	0	388	408	796
GULF	232	228	0	460
HAMILTON	0	1,195	501	1,696
HARDEE	160	9,276	0	9,436
HENDRY	939	1,000	4,324	6,263
HERNANDO	911	8,656	1,820	11,387
HIGHLANDS	2,176	6,137	275	8,588
HILLSBOROUGH	446	65,699	26,058	92,203
HOLMES	0	1,191	179	1,370
INDIAN RIVER	0	0	8,838	8,838
JACKSON	0	3,365	499	3,864
JEFFERSON	0	809	0	809
LAFAYETTE	0	0	647	647
LAKE	0	24,109	2,308	26,417
LEE	0	0	0	0

TABLE 6-1 Hurricane Evacuation Shelter Spaces Identified Since 1995				
Totals Per County	**Pre-Mitigation ARC 4496 Capacity (persons)**	**EHPA Capacity Gained (persons)**	**Retrofitted / Mitigated Capacity Gained (persons)**	**Total ARC 4496 Spaces**
LEON	822	1,245	21,036	23,103
LEVY	70	276	2,263	2,609
LIBERTY	0	610	617	1,227
MADISON	0	0	4,236	4,236
MANATEE	0	23,696	9,735	33,431
MARION	0	6,314	6,765	13,079
MARTIN	5,536	10,047	5,847	21,430
MIAMI-DADE	8,858	26,671	40,941	76,470
MONROE	0	0	723	723
NASSAU	0	4,081	326	4,407
OKALOOSA	6,420	2,025	4,264	12,709
OKEECHOBEE	0	1,011	811	1,822
ORANGE	2,055	28,678	475	31,208
OSCEOLA	285	6,875	18,823	25,983
PALM BEACH	1,926	47,986	21,567	71,479
PASCO	166	17,981	12,125	30,272
PINELLAS	13,479	8,991	10,771	33,241
POLK	1,007	38,106	823	39,936
PUTNAM	0	955	1,065	2,020
SAINT JOHNS	0	7,241	4,118	11,359
SAINT LUCIE	3,584	4,388	9,413	17,385
SANTA ROSA	704	5,471	4,707	10,882
SARASOTA	0	9,296	5,661	14,957
SEMINOLE	0	1,000	14,893	15,893
SUMTER	0	200	344	544
SUWANNEE	0	3,484	50	3,534
TAYLOR	0	2,424	1,202	3,626
UNION	0	345	939	1,284
VOLUSIA	2,614	8,155	11,905	22,674
WAKULLA	0	800	0	800
WALTON	1,262	5,269	2,766	9,297
WASHINGTON	0	1,171	3,609	4,780
Note: For simplicity, unless otherwise noted, all general population hurricane Shelter capacities are calculated based on 20 sq.ft. per evacuee, and Persons with Special Needs (SpNS) Hurricane Shelters on 60 sq.ft. per client.				
Total- General Population	61,031	482,498	381,174	**924,703**
Total SpNS	2,600	17,111	16,510	**36,221**
Grand Total	63,631	499,609	397,684	**960,924**

Through research Florida has been able to increase its understanding of shelter demand. By more accurately identifying demand the State is able to plan for anticipated need thus reducing its hurricane shelter deficit. Through the technologies applied to this effort, such as LiDAR, and improved SLOSH computer models, the Division is able to more precisely determine which areas are vulnerable to hurricane storm surge. These improved techniques are the results of the 2010 SRES. In the past, studies were conducted only regionally and sporadically when funding was available. Methodologies varied to meet the needs at the time. The 2010 SRES updated all 11 RPC regions simultaneously, and were held to the same methodology.

The application of the data in the new storm tide atlases of the SRES allows local emergency management officials to refine their designated evacuation zones for each storm scenario, increase accuracy in vulnerability assessments which means evacuation areas represent a more precise number of people at risk. Increased accuracy and education combined with a high level of behavioral analyses yielded a better picture of the number of shelter spaces actually needed. Two examples of this application are Broward and Miami-Dade counties. Through its LiDAR project, Broward County was able to reduce its projected number of hurricane evacuees by about 250,000 residents, which reduced anticipated shelter demand by an estimated 37,500 spaces. Miami-Dade County was also able to reduce its evacuation zones through more precise ground surveys. Its new evacuation zones reduce the number of those who will be ordered to evacuate by approximately 395,000, which also reduced anticipated shelter demand by an estimated 59,250 spaces. Hurricane shelter demand estimates have not yet been reduced through adjustments to reflect current census information (i.e., 2010 census) but the projections used in the 2010 SRES estimated the population at 19,979,199 which was over the 2010 census (18,801,310) estimate by 1,177, 889. The population and demand data from the 2010 SRES was incorporated directly into the 2012 Plan as the 2014 and 2019 projections because of the accuracy of numbers and the slightly higher estimate of the population than the census.

Historically, 25 percent or more of the estimated evacuating population were projected to seek safety in public shelters. Many of the post-1998 Hurricane Evacuation Studies, including the 2010 SRES, are now indicating that fewer than 15 percent of the vulnerable population will seek public shelter for a Category 5 hurricane. The 2004 hurricane season provides an example of relatively low public shelter use. Though none of the storms made landfall as a Category 5 hurricane, two storms approached Florida at near Category 5 strength before making landfall as a Category 3 and 4; (Hurricane Ivan and Hurricane Charley respectively). During Hurricane Ivan, an estimated 544,900 persons were under evacuation orders and only 33,472 evacuees were housed in public shelters (6 percent). During Hurricane Charley, although it rapidly intensified only a few hours before landfall, there were an estimated 2.7 million persons under evacuation orders and only 102,094 evacuees were housed in public shelters (3.75 percent). While these examples are not evidence of a decrease in demand they do show that under many circumstances public shelter demand is lower.

Since publication of the 2000 Plan, the statewide average estimated demand has fallen from about 24 percent to about eight (8) percent. The practical effect is an apparent reduction in hurricane shelter space demand since 2000, which means federal, state and local agencies do not need to invest public funds to create the additional "bricks-and-mortar" shelter spaces.

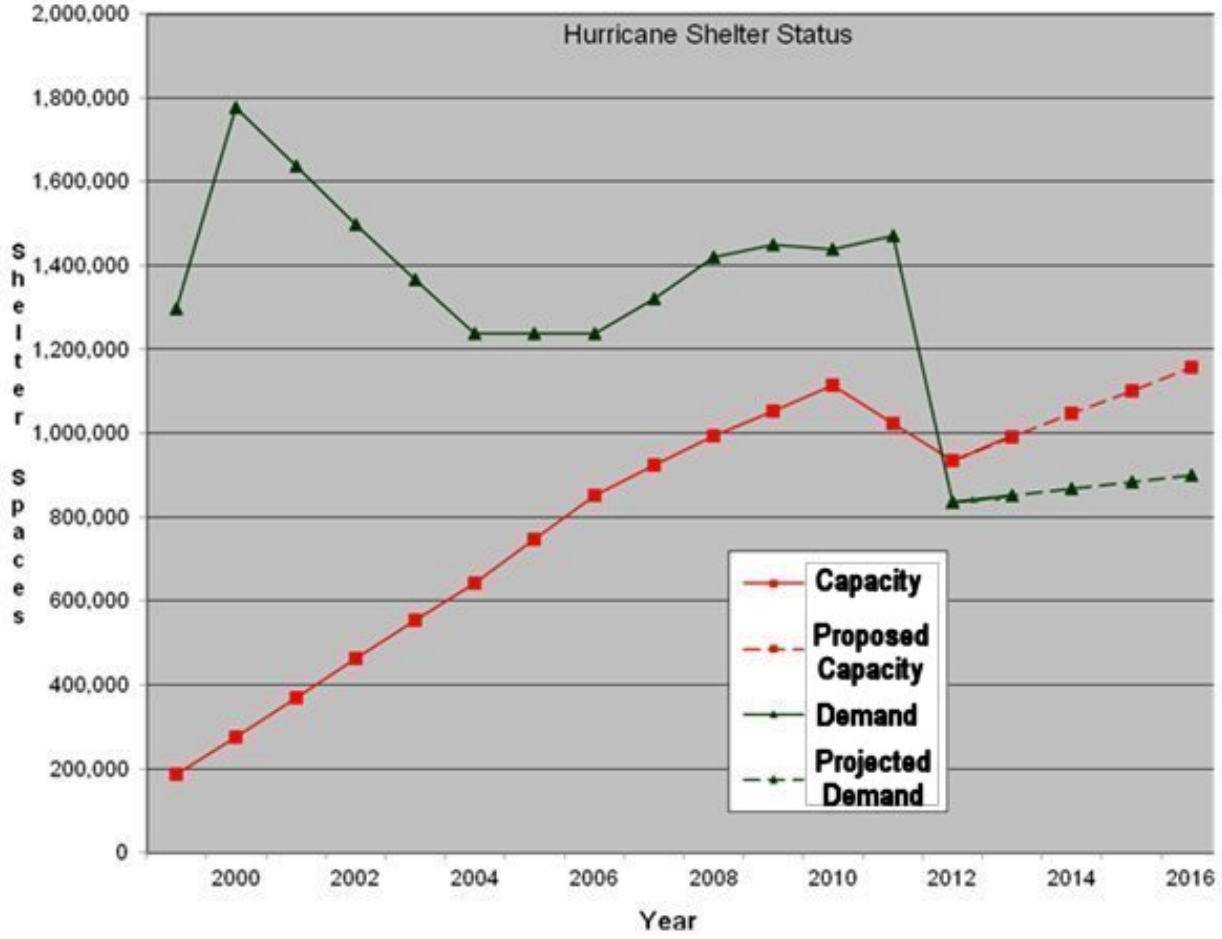
The Division has also developed a public information program to compliment the other hurricane evacuation shelter deficit reduction efforts. The Division educates residents on the hazards they face and how to best deal with them. A key issue is whether or not to evacuate and, if so, to where. Education on the hazards and how they affect a community lead to residents making better-informed decisions in a crisis. That effort is being supported by public service announcements, hurricane expositions, training of local responders and volunteers, and through emergency messages during times of crisis. This is expected to be a long-term process that will help to reduce the need for public hurricane evacuation shelter space.

As seen in Table 6-1, since 1999 the Division's hurricane evacuation shelter survey and retrofit program has identified, created or otherwise documented 461,813 hurricane evacuation shelter spaces that meet ARC 4496 guidelines. Public school new construction programs have created an additional 499,604 hurricane evacuation shelter spaces. Therefore, by the 2014 hurricane season, Florida will have a total of 960,924 shelter spaces that meet ARC 4496 guidelines. The demand for hurricane evacuation shelter space has also been significantly reduced over the past eleven years due to improvements in public information, storm hazard models and more accurate census data. Since 2000, Florida's deficit of hurricane evacuation shelter space has been eliminated on a statewide aggregate basis. However, individual regions remain in a hurricane evacuation shelter space deficit.

With publication of this Plan, Florida now has 41 counties with demonstrable surpluses of General Population (GP) hurricane evacuation shelter space. The counties with surpluses of GP space include: Bay, Bradford, Brevard, Broward, Columbia, Escambia, Gadsden, Gilchrist, Hamilton, Hardee, Hendry, Highlands, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Leon, Liberty, Madison, Manatee, Martin, Miami-Dade, Nassau, Okaloosa, Orange, Osceola, Palm Beach, Pasco, Polk, Saint Johns, Saint Lucie, Santa Rosa, Seminole, Suwannee, Taylor, Union, Walton, and Washington.

There are fewer counties, 25, with a demonstrable surplus of SpNS hurricane evacuation shelter space. The counties with surpluses of SpNS space include: Bradford, Brevard, Broward, Citrus, Desoto, Duval, Gilchrist, Glades, Hernando, Hillsborough, Indian River, Lafayette, Levy, Marion, Martin, Miami-Dade, Okaloosa, Orange, Osceola, Putnam, Saint Johns, Santa Rosa, Volusia, Walton, and Washington.

Figure 6-1. Projected Hurricane Shelter Deficit Reduction



7.0 CONCLUSIONS

As a result of Hurricane Andrew and the Lewis Commission Report, the State of Florida recognized the necessity of providing safe hurricane evacuation shelter space for its residents during disasters. In support of this goal, the Division, every two years, submits to the Governor and Cabinet, the *Statewide Emergency Shelter Plan.* The Plan identifies the general location and square footage of existing GP and SpNS by RPC region, and needed GP and SpNS space during the next five (5) years. The Plan also includes information on the availability of shelters that accept pets. The Department of Health assisted the Division in determining the estimated need for SpNS hurricane evacuation shelter space.

The 2014 Plan shows that Florida on a statewide aggregate basis has eliminated the deficit GP public hurricane evacuation shelter space. However, a deficit of SpNS spaces continues to exist. Since 1995, more than 960,924 hurricane evacuation shelter spaces have been identified, created through retrofitting of existing buildings, or through new construction (e.g., EHPA). As the Division continues to map Florida's coastlines through LiDAR mapping and other improved topographic survey techniques, it is estimated that the public hurricane evacuation shelter demand will continue to be reduced. Since 2004, Florida's statewide aggregate public hurricane evacuation shelter space demand has been reduced to 841,892. In contrast, there was an estimated hurricane evacuation shelter demand of 1,776,606 shelter spaces in 2000.

However, there are still three (3) regions of the state that currently have a deficit of general population hurricane evacuation shelter space, and a fourth that could slide back into a deficit if an inadequate number of spaces are added to the inventory over the next two to five years. Seven (7) regions currently have deficits of SpNS space. Regions that currently have an adequate number of hurricane evacuation shelter spaces will need to maintain the inventory. Over time, current hurricane evacuation shelter buildings may (or will) be decommissioned due to age and other issues; such as, remodeling or reuse that's incompatible with mass care shelter operations, removal or deterioration of window protection products; etc. There may also be changes in storm hazard maps (e.g., SLOSH, national flood insurance maps, etc.) that could affect their recognition as meeting hurricane safety criteria. Thus, even though the aggregate statewide deficit of GP space is eliminated in the 2014 Plan, a "maintenance level" of shelter space production will be necessary to avoid falling back into a deficit situation.