

# 2018 Statewide Emergency Shelter Plan

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## EXECUTIVE SUMMARY

Pursuant to §1013.372(2) and §252.385(2)(b), Florida Statutes, (F.S.) 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 shelter (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. 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 had been included in total population hurricane evacuation shelter demand estimates and hurricane evacuation shelter capacities. 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 shelter types 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 2018 and 2023, the quantity of recognized hurricane evacuation shelter spaces per region, and if there is a deficit or sufficient capacity of spaces per region. At this time, seven (7) RPC regions have a sufficient capacity of GP hurricane evacuation shelter space in 2018 (West Florida/Region 1, Apalachee/Region 2, North Central Florida/Region 3, Northeast Florida/Region 4, East Central Florida/Region 5, Treasure Coast/Region 9 and South Florida/Region 10). Nine (9) out of ten (10) RPC regions continue to have a deficit of SpNS spaces in 2018.

Table EX-1.

## Regional Summaries of Hurricane Shelter Demands and Deficits / Sufficient Capacities for 2018 through 2023

## General Population and Special Needs Shelters

RPC Region	RPC Region Name	General Population Shelter Demand and Capacities						Special Needs Shelter Demand and Capacities					
		2018 Category 5 Shelter Demand, persons	2023 Category 5 Shelter Demand, persons	2018 Risk Shelter Capacity, persons	2018 Shelter Deficits / Sufficient Capacity, persons	2023 Shelter Deficits / Sufficient Capacity, persons	2018 Category 5 Shelter Demand, clients	2023 Category 5 Shelter Demand, clients	2018 Risk Shelter Capacity, clients	2018 Shelter Deficits / Sufficient Capacity, persons	2023 Shelter Deficits / Sufficient Capacity, persons		
1	West Florida (WF)	33,253	33,719	80,036	46,783	46,317	2,899	2,940	2,785	(114)	(155)		
2	Apalachee (APAL)	12,861	13,091	43,061	30,200	29,970	2,541	2,612	811	(1,730)	(1,801)		
3	North Central Florida (NCF)	52,316	52,629	67,329	15,013	14,700	3,396	3,419	3,021	(375)	(398)		
4	Northeast Florida (NEF)	82,319	82,744	138,671	56,352	55,927	5,742	5,847	4,627	(1,115)	(1,220)		
5	East Central Florida (ECF)	155,001	156,053	176,597	21,596	20,544	9,109	9,175	7,167	(1,942)	(2,008)		
6	Central Florida (CF)	66,478	67,479	51,898	(14,580)	(15,581)	4,960	5,050	1,424	(3,536)	(3,626)		
7	Tampa Bay (TB)	174,867	177,669	159,991	(14,876)	(17,678)	8,597	8,759	8,536	(61)	(223)		
8	Southwest Florida (SWF)	148,168	148,987	25,220	(122,948)	(123,767)	8,696	8,748	110	(8,586)	(8,638)		
9	Treasure Coast (TC)	48,723	49,538	115,912	67,189	66,374	6,272	6,395	3,251	(3,021)	(3,144)		
10	South Florida (SF)	128,744	129,097	144,042	15,298	14,945	4,455	4,466	4,979	524	513		
	TOTALS:	902,730	911,006	1,002,757	100,027	91,751	56,667	57,411	36,711	(19,956)	(20,700)		

Based upon currently available information, RPC regions 1, 2, 3, 4, 5, 9 and 10 will continue to have sufficient GP space through 2023. The SpNS regional hurricane evacuation shelter space deficit situation is projected to continue through 2023. The projections do not assume addition of new space to regional inventories through 2023. Addition of new shelter facilities and/or local designation of new space could significantly reduce or eliminate the projected deficits.

The types of public facilities that should be constructed to comply with 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), F.S.; that is, public schools, community or state 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 A, B or C hurricane evacuation zones, and possibly Category D and E, 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. 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. The compliance with the law has improved. For last year's survey (Fiscal year 2015-2016) the Department of Education reported a finding of 100 percent compliance in the regions where the requirement applies and new facilities are being built.

District school boards have generally been reporting that the construction cost premium for incorporating the criteria is about three (3) to nine (9) percent. This is not necessarily an insignificant cost that must be borne by state and local agencies. Therefore, §1013.372(2), F.S. 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 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 the

American Red Cross (ARC) *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 539,793 hurricane evacuation shelter spaces that meet ARC 4496 guidelines. Public school new construction programs have created an additional 465,675 hurricane evacuation shelter spaces. Therefore, by the 2018 hurricane season, Florida will have a total of 1,039,468 shelter spaces that meet ARC 4496 guidelines. The perceived public shelter demand resulting from hurricane evacuation has been significantly reduced over the past 15 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. Florida’s hurricane evacuation shelter space demand for 2018 is 959,397.

With publication of this Plan, Florida now has 43 counties with sufficient capacity of GP hurricane evacuation shelter space. The counties with sufficient GP space include: Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Columbia, Dixie, Duval, Escambia, Flagler, Gadsden, Gilchrist, Glades, Hamilton, Hardee, Hendry, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Leon, Levy, Liberty, Madison, Martin, Nassau, Okaloosa, Orange, Osceola, Palm Beach, Saint Johns, Saint Lucie, Santa Rosa, Seminole, Taylor, Union, Walton, and Washington.

There are fewer counties, 30, with a sufficient capacity of SpNS hurricane evacuation shelter space. The counties with a sufficient capacity of SpNS space include: Baker, Brevard, Broward, Citrus, Clay, Columbia, DeSoto, Escambia, Flagler, Gilchrist, Glades, Hamilton, Hardee, Hernando, Hillsborough, Indian River, Lafayette, Leon, Levy, Manatee, Martin, Miami-Dade, Osceola, Pasco, Putnam, Saint Johns, Santa Rosa, Union, Volusia 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 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 (F.S.), 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, 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 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.

The statute directed the Department of Education to develop standards for a public shelter design criteria in consultation with boards, county emergency management offices, and the Division of Emergency Management. 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. The facility may be 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 standby 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 into Chapter 423 of the Florida Building Code, which became effective March 1, 2002, and then Chapter 453 of the 5<sup>th</sup> Edition (2014) on June 30, 2015. 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 preparation for Hurricane Irma in 2017, evacuations were ordered in nearly all of Florida's 67 counties. The orders affected more than 6 million vulnerable citizens. About 200,000 sheltered across the state.

In a large-scale emergency, the availability of shelter space is a statewide challenge. Even if some individual counties have a sufficient capacity of shelter space, deficits in other counties 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, F.S. 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 duty 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 boards 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, community college, state agency, or local governing board when requesting the use of such facilities as public hurricane evacuation shelters.

§252.385, F.S. 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 pre-survey 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 storm tracks 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 shelter (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; 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), F.S. 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 and adequacy of facilities for SpNS.

§252.385(4)(a), F.S. 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. 453.25, *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 or state 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), F.S. 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 sufficient capacity of hurricane evacuation shelter space 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(4), F.S., provide state university boards of trustees statutory duties similar as those of district public schools and community or state 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. All campus buildings for which a design contract is entered into after July 1, 2001 are required to be constructed to the standard.

**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.

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 sufficient capacity of hurricane evacuation shelter space 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), F.S. 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, SpNS hurricane evacuation shelters designated by local emergency management agencies should at a minimum meet the ARC 4496 hurricane safety criteria, and preferably designed and constructed to higher performance codes and standards; such as the Public Shelter Design Criteria or the International Code Council's storm shelter standard (ICC 500).

## 2.0 EDUCATIONAL FACILITIES AS EMERGENCY SHELTERS

The Public Shelter Design Criteria, which are also known as Enhanced Hurricane Protection Area (EHPA), were designed to ensure that appropriate new educational facilities can serve as public shelters for emergency management purposes. The EHPA code provisions can be found in §453.25, *2017 Florida Building Code—Building, 6<sup>th</sup> Edition*. 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. During a declared state or local emergency public shelter functions can supersede normal educational functions. Therefore, consideration of the emergency management purpose is a critical component in the design of new educational facilities. The following sections will provide consultative (or advisory) guidance for implementing the criteria.

### 2.1 Public Shelter Design Criteria

The EHPA ensure that new educational facilities meet or exceed applicable national design and construction standards, guidelines and “best practices.” The EHPA 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 during the design process that 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 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, *Minimum Design Loads for Buildings and Other Structures* (ASCE 7). 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 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.

## 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, F.S.

**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), F.S. and s. 453.5.8, *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), F.S. 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), F.S. 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) 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 A, B or C hurricane evacuation zone are exempt from the EHPA criteria. "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.

Evacuation zones are applicable to coastal counties, and possibly counties adjacent to Lake Okeechobee. 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. Hurricane evacuation zones A, B and C 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), hurricane evacuation zones D and E may not be inundated by storm surge. Therefore, new educational facilities proposed to be located in D and E 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 evacuation zones D and E may in fact be outside of the SLOSH predicted inundation areas. EHPA's located in D and E hurricane evacuation zones 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. ARC 4496 also 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), F.S., 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), F.S. 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), F.S., the Division generally considers new educational facilities with less than 2,000 square feet of net 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.

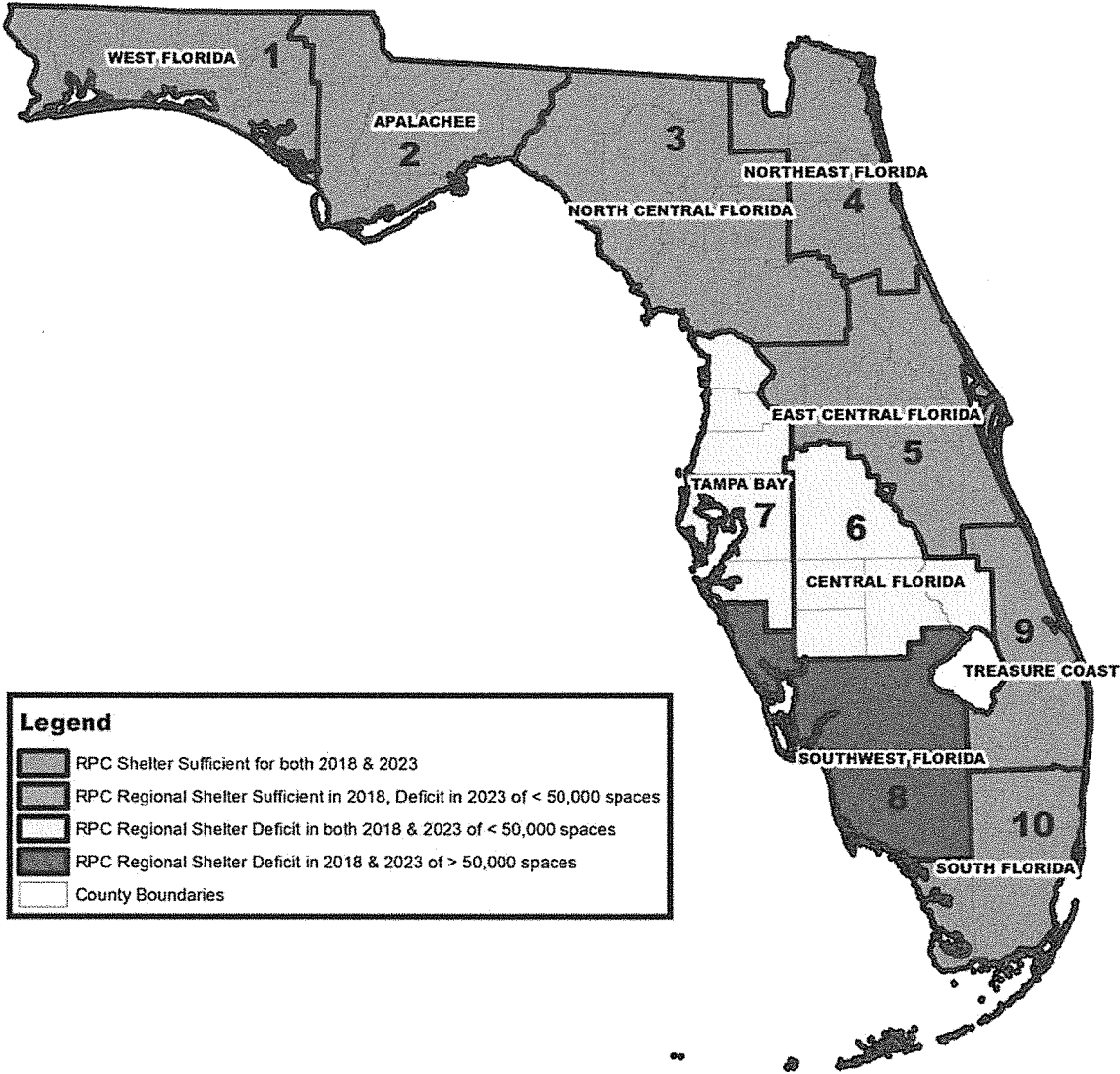
#### **2.2.4 Alterations, Maintenance or Repair of Existing Buildings**

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, F.S. and s. 453.5, *Florida Building Code--Building*, are exempt from compliance with the EHPA criteria.

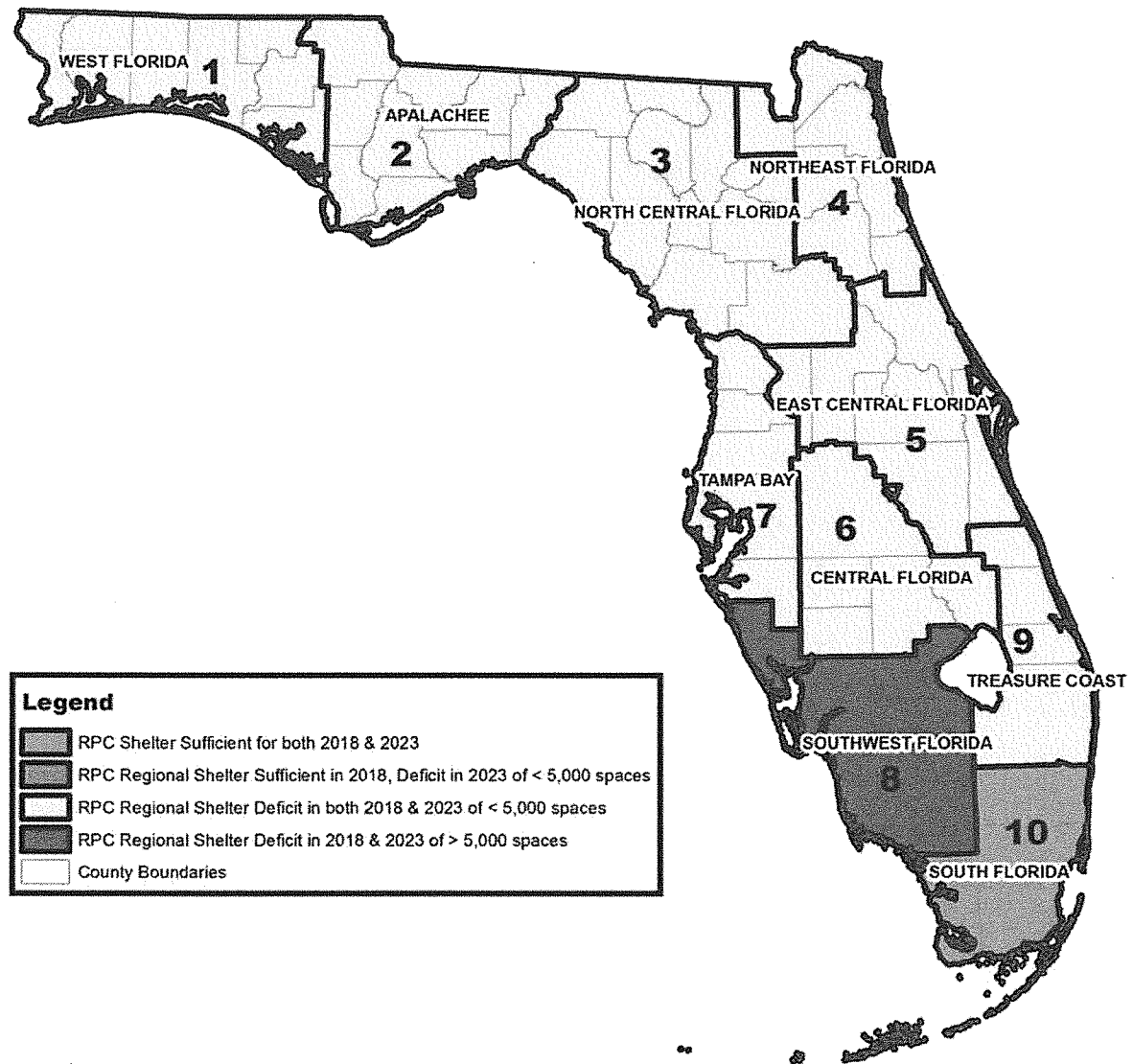
#### **2.2.5 No Regional Deficit of “Safe” Hurricane Evacuation Shelter Space**

§1013.372, F.S. 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 space 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, seven (7) RPC regions have sufficient capacity of GP hurricane evacuation shelter space in 2018, which includes RPC regions 1, 2, 3, 4, 5, 9 and 10. Based upon currently available information, a sufficient capacity of spaces will continue in RPC regions 1, 2, 3, 4, 5, 9 and 10 through 2023. However, as can be seen in Figure 2-2 there is a sufficient capacity of SpNS spaces in only one (1) region, region 10. The SpNS space deficits are projected to continue into 2023 if no new space is added to the inventory.

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



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





### **2.3 Exemption Process**

In accordance with §1013.372, F.S. and S. 453.25, *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.

### **2.4 Estimate of School District Compliance with EHPA Requirements (2015-2016)**

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 2018 Plan, the Division again collaborated with the Department of Education to compile a list of new EHPA school buildings from the FISH data. However, for the 2018 Plan, the list of new buildings was limited to those constructed in 2015-2016 with at least 4,000 net square feet. The Department of Education reported a finding of 100 percent compliance in the regions where the requirement applies and new facilities were being built. Universities and community or state colleges were not included primarily due to the fact that FISH data is limited to K-12. Universities and colleges only account for about two (2) percent of recognized hurricane evacuation shelter space.

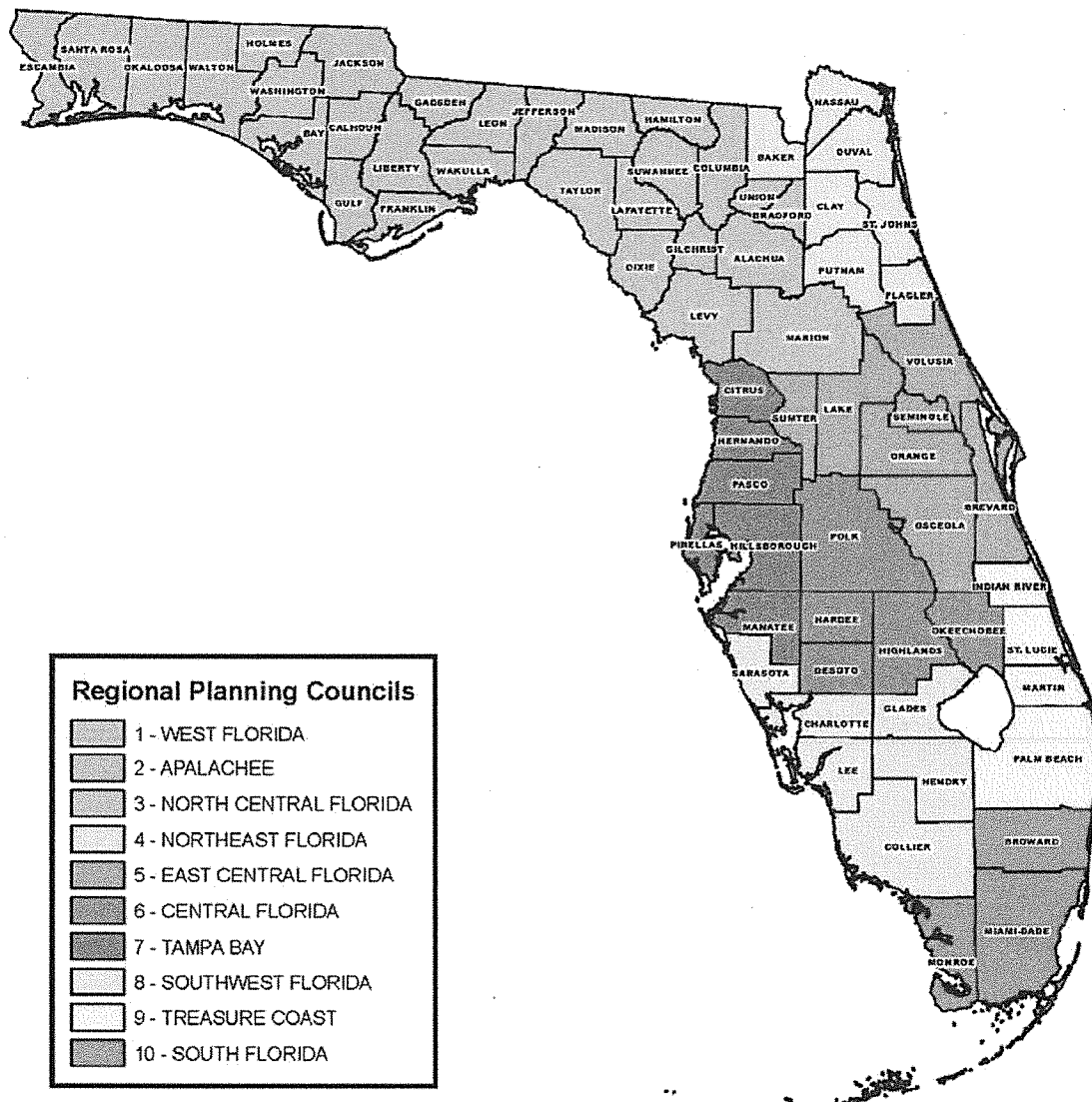
The Division will continue to coordinate with the Department of Education and local emergency managers to monitor and improve compliance.

### 3.0 REGIONAL HURRICANE EVACUATION SHELTER REQUIREMENTS

The Florida Statewide Regional Evacuation Studies (SRES) were updated in 2015 and some of the peninsula studies were updated in 2017 due to new storm information from the National Hurricane Center. Data from the SRES, University of Florida Bureau and Economic and Business Research, and coordination with County Emergency Management Agencies was utilized for estimating the projections in the 2018 Statewide Emergency Shelter Plan. The overall population projected in the 2018 SESP 20,481,201. County Emergency Managements provided 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 local issues in their jurisdiction. Counties which provided input are marked with (\*) in Appendix J.

The SRES regions are RPC regions. The RPC regions and their respective counties are shown in Figure 3-1 for illustration purposes.

**Figure 3-1. Regional Planning Councils 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. Risk shelters include those shelter spaces recognized by the Division as meeting ARC 4496 hurricane safety guidelines and identified as appropriate for use during a hurricane impact. The term “risk” 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 evacuation worst case scenario. Results contained in Table 3-1 for 2018 and 2023 are displayed in number of persons. Region/County square feet estimates for 2018 and 2023, using the same Category 5 worst case scenario, are provided in Table 3-2.

**Shelter Demand Sources/Results by County.** The 2018 through 2023 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 2018 through 2023 population estimates utilized information from the SRES and University of Florida’s Bureau of Economic and Business Research (BEBR) coordination with County Emergency Managements. 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, 2012 BEBR of baseline for housing unit and population estimates.

**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 standards, 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 standards. 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 guidelines. 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, 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 regional hurricane evacuation study 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 2018 and 2023. 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 utilized information from the SRES with adjustments directed by County Emergency Management Offices.

### **3.2 Location and Square Footage of Existing and Needed Shelters**

Tables 3-1 and 3-2 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 County Hurricane Evacuation Shelter Status**

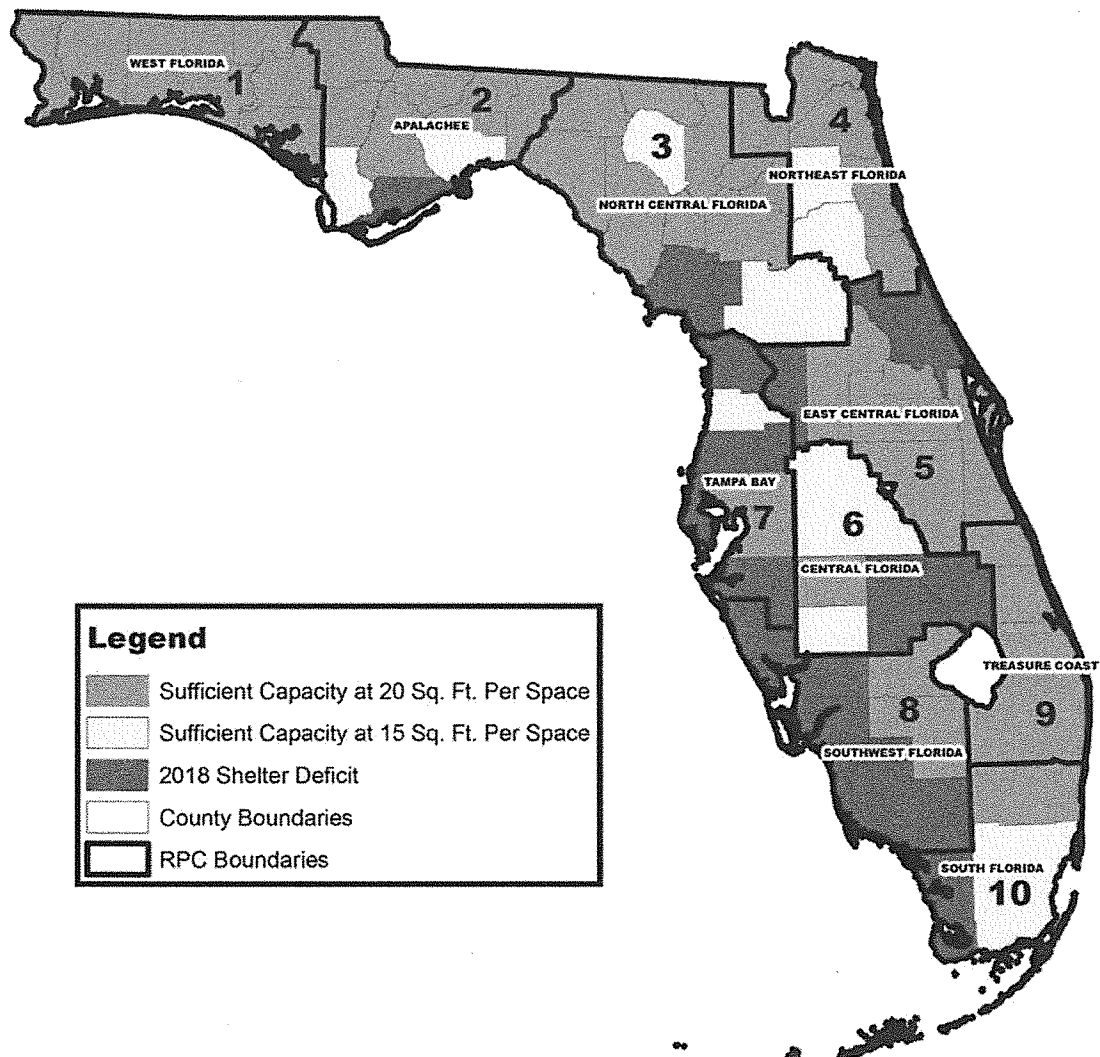
Though the EHPA codes are only required by statute in regions with deficits of hurricane evacuation shelter space, individual counties within such regions do continue to have deficits. All evacuations are managed locally, and state and county emergency managers and their partners need to continue to build shelter capacity for individual counties. Figure 3-2 provides sufficiency/deficit status for GP hurricane evacuation shelters for individual counties, and Figure 3-3 provides sufficiency/deficit status for SpNS hurricane evacuation shelters.

The color codes are keyed to individual county sheltering capability. For Figure 3-2, the green color code for GP shelters represents sufficient capacity to provide at least 20 sq.ft. of net usable floor area per demand evacuee, which is the minimum floor space required by the hurricane provisions of both EHPA codes and ICC 500 standard. The yellow color code represents sufficient capacity to provide at least 15 sq.ft. of net usable floor area per demand evacuee, which is the less-than-preferred short-term minimum floor space established as part of the ARC 4496 least-risk decision making process. The red color code indicates insufficient floor space for even the ARC short-term minimum recommendation.

For Figure 3-3, the green color code for SpNS represents sufficient capacity to provide at least 60 sq.ft. of net usable floor area per demand client. This is the minimum floor space recommended by the Division, Department of Health and partner agencies for SpNS. The yellow color code represents sufficient capacity to provide at least 40 sq.ft. of net usable floor area per demand client, which is the less-than-preferred short-term minimum used in historical plans. The red color code indicates insufficient floor space for even the obsolete historical minimum recommendation.

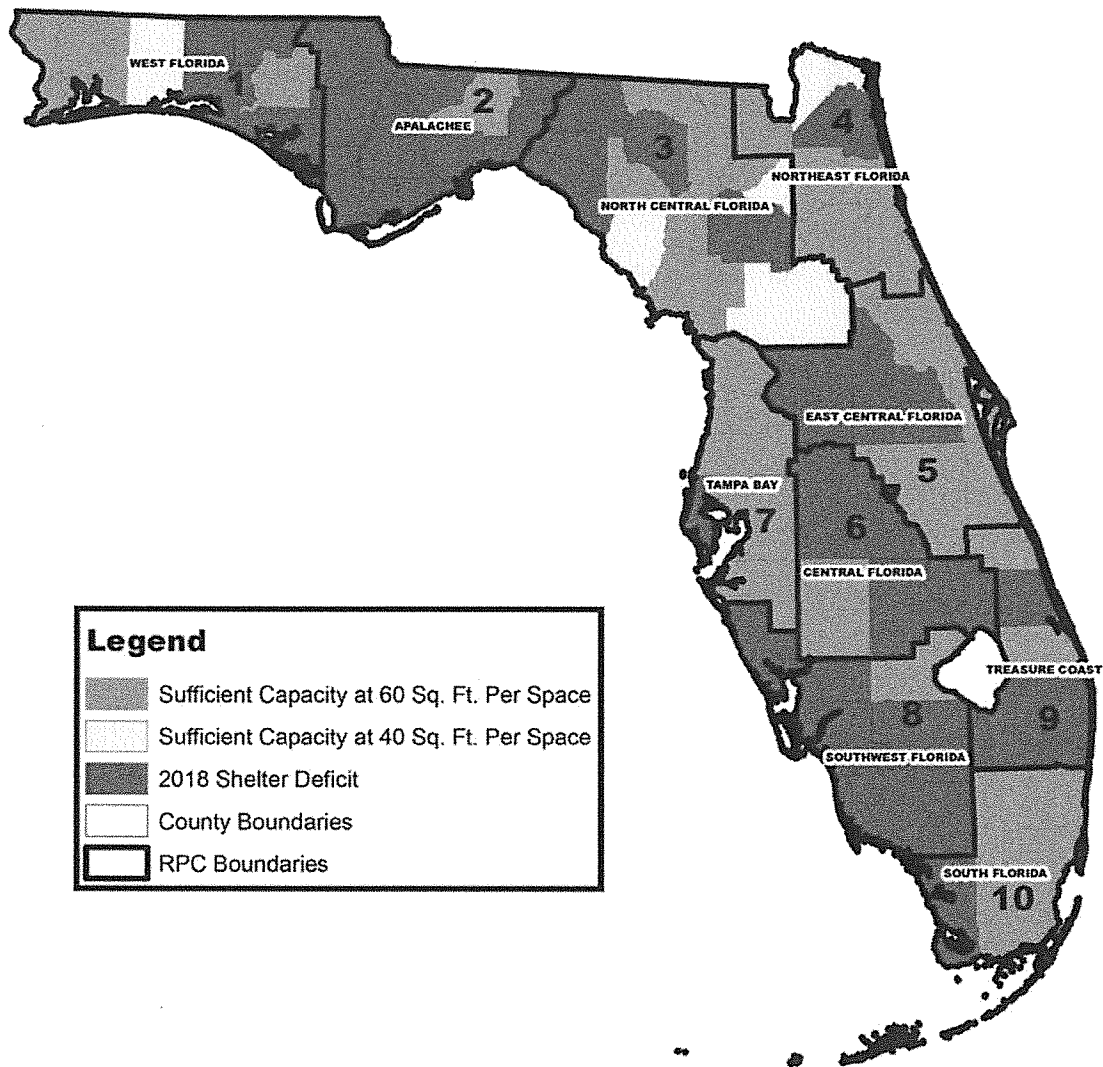
State and local emergency managers and other public officials prefer that persons ordered to evacuate for a hurricane stay within their home county if possible, region if necessary, and not evacuate long distances. Counties with deficits are still in need of additional hurricane evacuation shelter space.

**Figure 3-2. County Hurricane Evacuation Shelter Space Deficit / Sufficient Status of General Population Shelters**





**Figure 3-3. County Hurricane Evacuation Shelter Space Deficit / Sufficient Status of Special Needs Shelters**



### 3.4 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), F.S., this Plan includes information on the availability of shelters that accept pets.

Statewide, 32 counties provide a limited number of pet-friendly hurricane evacuation shelters that meet minimum hurricane safety criteria (i.e., ARC 4496). The pet-friendly counties have a total human occupant capacity of 641,426 spaces. The 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.” Another 9 counties indicate they have designated pet-friendly hurricane evacuation shelters, but they do not meet minimum hurricane safety criteria. There are 30 counties without 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. There are 3 counties with Pet Storage Facilities, totaling 33,820 space for people in the county.

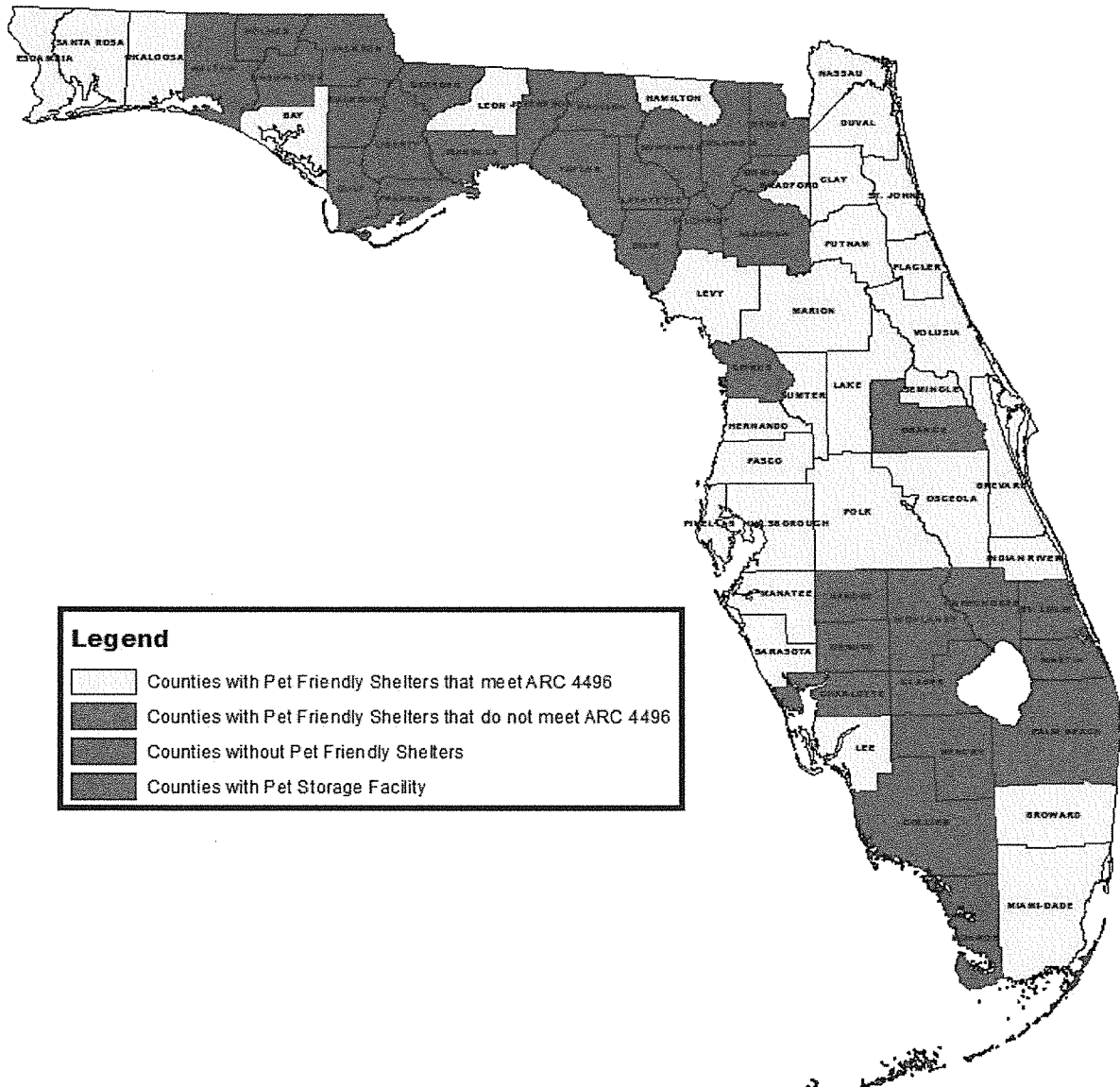
**Figure 3-4. Florida Counties with Designated Pet-Friendly Shelters**

Table 3-1 (1)

County	RPC Region #	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2018 Category 5 Shelter Demand In People	2023 Category 5 Shelter Demand In People	2018 Risk Shelter Capacity In People	2018 Shelter Surplus/ Deficit In People	2023 Shelter Surplus/ Deficit in People	2018 Category 5 Shelter Demand In Clients	2023 Category 5 Shelter Demand In Clients	2018 Risk Shelter Capacity In Clients	2018 Shelter Surplus/ Deficit in Clients	2023 Shelter Surplus/ Deficit in Clients
Bay	1	6,443	6,533	15,928	9,485	9,395	1,712	1,736	301	(1,411)	(1,435)
Escambia	1	10,680	10,830	25,218	14,538	14,388	500	507	1,160	660	653
Holmes	1	991	1,005	1,332	341	327	121	123	38	(83)	(85)
Okaloosa	1	5,927	6,010	11,493	5,566	5,483	100	101	82	(18)	(19)
Santa Rosa	1	5,875	5,957	12,067	6,192	6,110	150	152	940	790	788
Walton	1	1,807	1,832	9,205	7,398	7,373	150	152	92	(58)	(60)
Washington	1	1,530	1,551	4,793	3,263	3,242	166	168	172	6	4
Region 1 Subtotals		33,253	33,719	80,036	46,783	46,317	2,899	2,940	2,785	(114)	(155)
Calhoun	2	1,019	1,032	2,996	1,977	1,963	91	92	0	(91)	(92)
Franklin	2	319	325	0	(319)	(325)	214	218	0	(214)	(218)
Gadsden	2	3,275	3,360	6,153	2,878	2,793	632	649	0	(632)	(649)
Gulf	2	532	542	460	(72)	(82)	208	212	0	(208)	(212)
Jackson	2	1,757	1,769	3,831	2,074	2,062	143	144	33	(110)	(111)
Jefferson	2	664	687	809	145	122	278	288	0	(278)	(288)
Leon	2	3,987	3,994	26,427	22,440	22,433	600	612	705	105	93
Liberty	2	467	495	1,585	1,118	1,090	275	292	73	(202)	(219)
Wakulla	2	844	886	800	(44)	(86)	100	105	0	(100)	(105)
Region 2 Subtotals		12,864	13,091	43,061	30,197	29,969	2,541	2,612	811	(1,730)	(1,801)
Alachua	3	11,864	11,923	11,896	32	(27)	1,200	1,206	621	(579)	(585)
Bradford	3	1,287	1,304	2,260	973	956	167	169	161	(6)	(8)
Columbia	3	4,661	4,716	4,730	69	14	438	443	596	158	153
Dixie	3	1,832	1,850	6,810	4,978	4,960	142	143	120	(22)	(23)
Gilchrist	3	1,123	1,131	3,027	1,904	1,896	76	77	102	26	25
Hamilton	3	1,038	1,048	1,239	201	191	76	77	76	0	(1)
Lafayette	3	609	611	698	89	87	13	13	60	47	47
Levy	3	4,184	4,203	5,322	1,138	1,119	19	19	136	117	117
Madison	3	1,259	1,268	4,208	2,949	2,940	67	67	28	(39)	(39)
Marion	3	18,166	18,257	17,247	(919)	(1,010)	1,000	1,005	940	(60)	(65)
Suwannee	3	3,872	3,885	3,484	(388)	(401)	92	92	50	(42)	(42)
Taylor	3	1,713	1,721	4,144	2,431	2,423	63	63	0	(63)	(63)
Union	3	708	713	2,264	1,556	1,551	43	43	131	88	88
Region 3 Subtotals		52,316	52,629	67,329	15,013	14,700	3,396	3,419	3,021	(375)	(398)

Table 3-1 (2)

County	RPC Region #	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2018 Category 5 Shelter Demand In People	2023 Category 5 Shelter Demand In People	2018 Risk Shelter Capacity In People	2018 Shelter Surplus/ Deficit in People	2023 Shelter Surplus/ Deficit in People	2018 Category 5 Shelter Demand In Clients	2023 Category 5 Shelter Demand In Clients	2018 Risk Shelter Capacity In Clients	2018 Shelter Surplus/ Deficit in Clients	2023 Shelter Surplus/ Deficit in Clients
Baker	4	2,618	2,631	3,459	841	828	79	79	79	0	(0)
Clay	4	11,281	11,326	9,152	(2,129)	(2,174)	250	251	335	85	84
Duval	4	40,802	41,088	53,407	12,605	12,319	4,262	4,292	2,658	(1,604)	(1,634)
Flagler	4	6,227	6,258	45,438	39,211	39,180	328	400	658	330	258
Nassau	4	5,318	5,334	5,563	245	229	208	209	156	(52)	(53)
Putnam	4	4,748	4,748	4,621	(127)	(127)	100	100	145	45	45
St Johns	4	11,325	11,359	17,031	5,706	5,672	515	517	596	81	79
Region 4 Subtotals		82,319	82,744	138,671	56,352	55,927	5,742	5,847	4,627	(1,115)	(1,220)
Brevard	5	31,469	31,563	39,964	8,495	8,401	2,090	2,096	2,330	240	234
Lake	5	24,960	25,334	27,646	2,686	2,312	1,414	1,435	314	(1,100)	(1,121)
Orange	5	27,952	28,184	29,957	2,005	1,773	3,800	3,832	1,402	(2,398)	(2,430)
Osceola	5	10,151	10,202	23,939	13,788	13,737	660	663	1,331	671	668
Seminole	5	11,445	11,466	31,126	19,681	19,660	750	751	300	(450)	(451)
Sumter	5	9,786	9,818	1,286	(8,500)	(8,532)	32	32	0	(32)	(32)
Volusia	5	39,238	39,485	22,679	(16,559)	(16,806)	363	365	1,490	1,127	1,125
Region 5 Subtotals		155,001	156,053	176,597	21,596	20,544	9,109	9,175	7,167	(1,942)	(2,008)
Desoto	6	3,159	3,244	2,542	(617)	(702)	120	123	211	91	88
Hardee	6	2,167	2,210	4,687	2,520	2,477	36	37	75	39	38
Highlands	6	11,553	11,634	8,513	(3,040)	(3,121)	285	287	75	(210)	(212)
Okeechobee	6	7,342	7,584	1,639	(5,703)	(5,945)	1,273	1,315	0	(1,273)	(1,315)
Polk	6	42,257	42,806	34,517	(7,740)	(8,289)	3,246	3,288	1,063	(2,183)	(2,225)
Region 6 Subtotals		66,478	67,479	51,898	(14,580)	(15,581)	4,960	5,050	1,424	(3,536)	(3,626)



Table 3-1 (3)

County	RPC Region #	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2018 Category 5 Shelter Demand In People	2023 Category 5 Shelter Demand In People	2018 Risk Shelter Capacity In People	2018 Shelter Surplus/ Deficit in People	2023 Shelter Surplus/ Deficit in People	2018 Category 5 Shelter Demand In Clients	2023 Category 5 Shelter Demand In Clients	2018 Risk Shelter Capacity In Clients	2018 Shelter Surplus/ Deficit in Clients	2023 Shelter Surplus/ Deficit in Clients
Citrus	7	13,314	13,374	3,647	(9,667)	(9,727)	60	60	208	148	148
Hernando	7	11,565	11,609	9,056	(2,509)	(2,553)	44	44	411	367	367
Hillsborough	7	52,316	52,515	85,288	32,972	32,773	2,927	2,938	3,250	323	312
Manatee	7	24,200	25,981	15,819	(8,381)	(10,162)	600	700	933	333	233
Pasco	7	31,294	31,569	18,956	(12,333)	(12,613)	966	975	1,466	500	491
Pinellas	7	42,178	42,621	27,225	(14,953)	(15,396)	4,000	4,042	2,268	(1,732)	(1,774)
Region 7 Subtotals		174,867	177,669	159,991	(14,876)	(17,678)	8,597	8,759	8,536	(61)	(223)
Charlotte	8	12,089	12,180	0	(12,089)	(12,180)	1,277	1,287	0	(1,277)	(1,287)
Collier	8	29,964	30,129	5,784	(24,180)	(24,345)	2,011	2,022	0	(2,011)	(2,022)
Glades	8	1,594	1,597	4,133	2,539	2,536	19	19	110	91	91
Hendry	8	3,285	3,312	6,263	2,978	2,951	204	206	0	(204)	(206)
Lee	8	71,410	71,681	500	(70,910)	(71,181)	3,285	3,297	0	(3,285)	(3,297)
Sarasota	8	29,826	30,088	8,540	(21,286)	(21,548)	1,900	1,917	0	(1,900)	(1,917)
Region 8 Subtotals		148,168	148,987	25,220	(122,948)	(123,767)	8,696	8,748	110	(8,586)	(8,638)
Indian River	9	5,805	5,950	10,356	4,551	4,406	501	514	582	81	68
Martin	9	5,331	5,448	19,211	13,880	13,763	400	409	1,369	969	960
Palm Beach	9	29,754	30,111	69,460	39,706	39,349	2,520	2,550	800	(1,720)	(1,750)
St. Lucie	9	7,833	8,029	16,885	9,052	8,856	2,851	2,922	500	(2,351)	(2,422)
Region 9 Subtotals		48,723	49,538	115,912	67,189	66,374	6,272	6,395	3,251	(3,021)	(3,144)
Broward	10	28,299	28,356	58,954	30,655	30,598	1,277	1,280	1,550	273	270
Miami-Dade	10	97,855	98,149	84,486	(13,369)	(13,663)	2,717	2,725	3,308	591	583
Monroe	10	2,590	2,593	602	(1,988)	(1,991)	461	462	121	(340)	(341)
Region 10 Subtotals		128,744	129,097	144,042	15,298	14,945	4,455	4,466	4,979	524	513
TOTAL	Statewide	902,730	911,006	1,002,757	100,024	91,751	56,667	57,411	36,711	(19,956)	(20,700)

Table 3-2 (1)

County	RPC Region #	General Population Shelter Demand/Capacity				Special Needs Shelter Demand/Capacity					
		2018 Category 5 Shelter Demand In People	2023 Category 5 Shelter Demand In People	2018 Risk Shelter Capacity In People	2018 Shelter Surplus/Deficit in People	2018 Category 5 Shelter Demand In Clients	2023 Category 5 Shelter Demand In Clients	2018 Risk Shelter Capacity In Clients	2018 Shelter Surplus/Deficit in Clients	2023 Shelter Surplus/Deficit in Clients	
Bay	1	128,860	130,664	318,560	189,700	187,896	102,720	104,158	18,060	(84,660)	(86,098)
Escambia	1	213,600	216,590	504,360	290,760	287,770	30,000	30,420	69,600	39,600	39,180
Holmes	1	19,820	20,097	26,640	6,820	6,543	7,260	7,362	2,280	(4,980)	(5,082)
Okaloosa	1	118,540	120,200	229,860	111,320	109,660	6,000	6,084	4,920	(1,080)	(1,164)
Santa Rosa	1	117,500	119,145	241,340	123,840	122,195	9,000	9,126	56,400	47,400	47,274
Walton	1	36,140	36,646	184,100	147,960	147,454	9,000	9,126	5,520	(3,480)	(3,606)
Washington	1	30,600	31,028	95,860	65,260	64,832	9,960	10,099	10,320	360	221
Region 1 Subtotals		665,060	674,371	1,600,720	935,660	926,349	173,940	176,375	167,100	(6,840)	(9,275)
Calhoun	2	20,380	20,645	59,920	39,540	39,275	5,460	5,531	0	(5,460)	(5,531)
Franklin	2	6,380	6,508	0	(6,380)	(6,508)	12,840	13,097	0	(12,840)	(13,097)
Gadsden	2	65,440	67,207	123,060	57,620	55,853	37,920	38,944	0	(37,920)	(38,944)
Gulf	2	10,640	10,832	9,200	(1,440)	(1,632)	12,480	12,705	0	(12,480)	(12,705)
Jackson	2	35,140	35,386	76,620	41,480	41,234	8,580	8,640	1,980	(6,600)	(6,660)
Jefferson	2	13,280	13,745	16,180	2,900	2,435	16,680	17,264	0	(16,680)	(17,264)
Leon	2	79,740	79,880	528,540	448,800	448,660	36,000	36,720	42,300	6,300	5,580
Liberty	2	9,340	9,900	31,700	22,360	21,800	16,500	17,490	4,380	(12,120)	(13,110)
Wakulla	2	16,880	17,724	16,000	(880)	(1,724)	6,000	6,300	0	(6,000)	(6,300)
Region 2 Subtotals		257,220	261,826	861,220	604,000	599,394	152,460	156,690	48,660	(103,800)	(108,030)
Alachua	3	237,280	238,466	237,920	640	(546)	72,000	72,360	37,260	(34,740)	(35,100)
Bradford	3	25,740	26,082	45,200	19,460	19,118	10,020	10,153	9,660	(360)	(493)
Columbia	3	93,220	94,320	94,600	1,380	280	26,280	26,590	35,760	9,480	9,170
Dixie	3	36,640	37,006	136,200	99,560	99,194	8,520	8,605	7,200	(1,320)	(1,405)
Gilchrist	3	22,460	22,613	60,540	38,080	37,927	4,560	4,591	6,120	1,560	1,529
Hamilton	3	20,760	20,968	24,780	4,020	3,812	4,560	4,606	4,560	0	(46)
Lafayette	3	12,180	12,220	13,960	1,780	1,740	780	783	3,600	2,820	2,817
Levy	5	83,680	84,057	106,440	22,760	22,383	1,140	1,145	8,160	7,020	7,015
Madison	3	25,180	25,351	84,160	58,980	58,809	4,020	4,047	1,680	(2,340)	(2,367)
Marion	5	363,320	365,137	344,940	(18,380)	(20,197)	60,000	60,300	56,400	(3,600)	(3,900)
Suwannee	3	77,440	77,696	69,680	(7,760)	(8,016)	5,520	5,538	3,000	(2,520)	(2,538)
Taylor	3	34,260	34,414	82,880	48,620	48,466	3,780	3,797	0	(3,780)	(3,797)
Union	3	14,160	14,256	45,280	31,120	31,024	2,580	2,598	7,860	5,280	5,262
Region 3 Subtotals		1,046,320	1,052,586	1,346,580	300,260	293,994	203,760	205,113	181,260	(22,500)	(23,853)

Table 3-2 (2)

County	RPC Region #	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2018 Category 5 Shelter Demand In People	2023 Category 5 Shelter Demand In People	2018 Risk Shelter Capacity In People	2018 Shelter Surplus/Deficit in People	2023 Shelter Surplus/Deficit in People	2018 Category 5 Shelter Demand In Clients	2023 Category 5 Shelter Demand In Clients	2018 Risk Shelter Capacity In Clients	2018 Shelter Surplus/Deficit in Clients	2023 Shelter Surplus/Deficit in Clients
Baker	4	52,360	52,622	69,180	16,820	16,558	4,740	4,764	4,740	0	(24)
Clay	4	225,620	226,522	183,040	(42,580)	(43,482)	15,000	15,060	20,100	5,100	5,040
Duval	4	816,040	821,752	1,068,140	252,100	246,388	255,720	257,510	159,480	(96,240)	(98,030)
Flagler	4	124,540	125,163	908,760	784,220	783,597	19,680	24,000	39,480	19,800	15,480
Nassau	4	106,360	106,679	111,260	4,900	4,581	12,480	12,517	9,360	(3,120)	(3,157)
Putnam	4	94,960	94,969	92,420	(2,540)	(2,549)	6,000	6,001	8,700	2,700	2,699
St Johns	4	226,500	227,180	340,620	114,120	113,441	30,900	30,993	35,760	4,860	4,767
Region 4 Subtotals		1,646,380	1,654,887	2,773,420	1,127,040	1,118,533	344,520	350,844	277,620	(66,900)	(73,224)
Brevard	5	629,380	631,268	799,280	169,900	168,012	125,400	125,776	139,800	14,400	14,024
Lake	5	499,200	506,688	552,920	53,720	46,232	84,840	86,113	18,840	(66,000)	(67,273)
Orange	5	559,040	563,680	599,140	40,100	35,460	228,000	229,892	84,120	(143,880)	(145,772)
Osceola	5	203,020	204,035	478,780	275,760	274,745	39,600	39,798	79,860	40,260	40,062
Seminole	5	228,900	229,312	622,520	393,620	393,208	45,000	45,081	18,000	(27,000)	(27,081)
Sumter	5	195,720	196,366	25,720	(170,000)	(170,646)	1,920	1,926	0	(1,920)	(1,926)
Volusia	5	784,760	789,704	453,580	(331,180)	(336,124)	21,780	21,917	89,400	67,620	67,483
Region 5 Subtotals		3,100,020	3,121,053	3,531,940	431,920	410,887	546,540	550,504	430,020	(116,520)	(120,484)
Desoto	6	63,180	64,886	50,840	(12,340)	(14,046)	7,200	7,394	12,660	5,460	5,266
Hardee	6	48,340	44,207	93,740	50,400	49,533	2,160	2,203	4,500	2,340	2,297
Highlands	6	231,060	232,677	170,260	(60,800)	(62,417)	17,100	17,220	4,500	(12,600)	(12,720)
Okeechobee	6	146,840	151,686	32,780	(114,060)	(118,906)	76,380	78,901	0	(76,380)	(78,901)
Polk	6	845,140	856,127	690,340	(154,800)	(165,787)	194,760	197,292	63,780	(130,980)	(133,512)
Region 6 Subtotals		1,329,560	1,349,583	1,037,960	(291,600)	(311,623)	297,600	303,010	85,440	(212,160)	(217,570)



Table 3-2 (3)

County	RPC Region #	General Population Shelter Demand/Capacity					Special Needs Shelter Demand/Capacity				
		2018 Category 5 Shelter Demand In People	2023 Category 5 Shelter Demand In People	2018 Risk Shelter Capacity In People	2018 Shelter Surplus/ Deficit in People	2023 Shelter Surplus/ Deficit in People	2018 Category 5 Shelter Demand In Clients	2023 Category 5 Shelter Demand In Clients	2018 Risk Shelter Capacity In Clients	2018 Shelter Surplus/ Deficit in Clients	2023 Shelter Surplus/ Deficit in Clients
Citrus	7	266,280	267,478	72,940	(193,340)	(194,538)	3,600	3,616	12,480	8,880	8,864
Hernando	7	231,300	232,179	181,120	(50,180)	(51,059)	2,640	2,650	24,660	22,020	22,010
Hillsborough	7	1,046,320	1,050,296	1,705,760	659,440	655,464	175,620	176,287	195,000	19,380	18,713
Manatee	7	484,000	519,620	316,380	(167,620)	(203,240)	36,000	42,000	55,980	19,980	13,980
Pasco	7	625,880	631,388	379,120	(246,760)	(252,268)	57,960	58,470	87,960	30,000	29,490
Pinellas	7	843,560	852,417	544,500	(299,060)	(307,917)	240,000	242,520	136,080	(103,920)	(106,440)
Region 7 Subtotals		3,497,340	3,553,378	3,199,820	(297,520)	(353,558)	515,820	525,544	512,160	(3,660)	(13,384)
Charlotte	8	241,780	243,593	0	(241,780)	(243,593)	76,620	77,195	0	(76,620)	(77,195)
Collier	8	599,280	602,576	115,680	(483,600)	(486,896)	120,660	121,324	0	(120,660)	(121,324)
Glades	8	31,880	31,937	82,660	50,780	50,723	1,140	1,142	6,600	5,460	5,458
Hendry	8	65,700	66,245	125,260	59,560	59,015	12,240	12,342	0	(12,240)	(12,342)
Lee	8	1,428,200	1,433,627	10,000	(1,418,200)	(1,423,627)	197,100	197,849	0	(197,100)	(197,849)
Sarasota	8	596,520	601,769	170,800	(425,720)	(430,969)	114,000	115,020	0	(114,000)	(115,020)
Region 8 Subtotals		2,963,360	2,979,749	504,400	(2,458,960)	(2,475,349)	521,760	524,871	6,600	(515,160)	(518,271)
Indian River	9	116,100	119,003	207,120	91,020	88,118	30,060	30,812	34,920	4,860	4,109
Martin	9	106,620	108,966	384,220	277,600	275,254	24,000	24,528	82,140	58,140	57,612
Palm Beach	9	595,080	602,221	1,389,200	794,120	786,979	151,200	153,014	48,000	(103,200)	(105,014)
St. Lucie	9	156,660	160,577	337,700	181,040	177,124	171,060	175,337	30,000	(141,060)	(145,337)
Region 9 Subtotals		974,460	990,766	2,318,240	1,343,780	1,327,474	376,320	383,690	195,060	(181,260)	(188,630)
Broward	10	565,980	567,112	1,179,080	613,100	611,968	76,620	76,773	93,000	16,380	16,227
Miami-Dade	10	1,957,100	1,962,971	1,689,720	(267,380)	(273,251)	163,020	163,509	198,480	35,460	34,971
Monroe	10	51,800	51,864	12,040	(39,760)	(39,824)	27,660	27,694	7,260	(20,400)	(20,434)
Region 10 Subtotals		2,574,880	2,581,947	2,880,840	305,960	298,893	267,300	267,976	298,740	31,440	30,764
TOTALS	Statewide	18,054,600	18,220,146	20,055,140	2,000,540	1,834,994	3,400,020	3,444,617	2,202,660	(1,197,360)	(1,241,957)

#### **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, F.S. 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 about 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 or state colleges account for only about one (1) percent of current public shelter capacity. Colleges are regionally distributed, and potentially located in areas with high demands for public hurricane evacuation shelter space. As with K-12 public schools, 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 have a general exemption from meeting many of the requirements of K-12 public schools under §1002.33(16)(a), F.S. However, §1002.33(18), F.S., requires charter schools that are not conversion schools (therefore, startup charter schools) to utilize facilities which comply with the generally applicable provisions of the Florida Building Code, but not the State Requirements for Educational Facilities. Privately owned charter school facilities are not required to be designated as emergency shelters under §1013.372, F.S. Pursuant to §252.385, F.S. an owner of a privately-owned charter school facility may agree in writing to use the facility as a public hurricane evacuation shelter.

## **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 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, libraries with training or educational rooms, 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 historically reported that the construction cost premium for incorporating the EHPA code provisions can range from less than one (1) to more than 20 percent, though typical cost was about three (3) to nine (9) percent. For most new facilities, this appeared 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, as required by §1013.372(2), F.S., the Division suggests use of existing state capital outlay to fund the additional cost of constructing hurricane evacuation shelters in public schools.

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

The Florida Division of Emergency Management is charged under §252.385, F.S. 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 to old wind codes 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 and door 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 federal Hazard Mitigation Grant Program (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), F.S. (superseded by §1013.372(1), F.S.) 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 464,500 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 45 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 465,675 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 spaces. EHPA spaces account for about 45 percent of the state's total capacity of ARC 4496 hurricane evacuation shelter spaces.

Some 109,293 spaces were identified through surveys as meeting ARC 4496 guidelines (“As-Is”) without further need for retrofitting. These facilities, however, do not necessarily meet all the EHPA code requirements. These As-Is or Pre-Mitigation ARC 4496 spaces account for about 10 percent of the state’s total spaces.

<b>TABLE 6-1 Hurricane Evacuation Shelter Spaces Identified Since 1995 (1)</b>				
<b>Totals Per County</b>	<b>As-Is or Pre-Mitigation ARC 4496 Capacity (persons)</b>	<b>EHPA 2018 Capacity Gained (persons)</b>	<b>Retrofitted / Mitigated Capacity Gained (persons)</b>	<b>Total 2018 ARC 4496 Spaces</b>
ALACHUA	1,050	1,600	9,867	12,517
BAKER	203	306	3,029	3,538
BAY	329	956	14,944	16,229
BRADFORD	0	161	2,260	2,421
BREVARD	1,566	12,063	28,665	42,294
BROWARD	500	60,004	0	60,504
CALHOUN	90	1,058	1,848	2,996
CHARLOTTE	0	0	0	0
CITRUS	0	208	3,647	3,855
CLAY	0	3,776	5,711	9,487
COLLIER	0	0	5,784	5,784
COLUMBIA	0	3,609	1,717	5,326
DESOTO	0	151	2,602	2,753
DIXIE	120	2,992	3,818	6,930
DUVAL	8,811	15,341	31,913	56,065
ESCAMBIA	4,388	1,803	20,187	26,378
FLAGLER	21,925	2,707	21,464	46,096
FRANKLIN	0	0	0	0
GADSDEN	0	3,565	2,588	6,153
GILCHRIST	0	0	3,129	3,129
GLADES	0	2,374	1,869	4,243
GULF	232	228	0	460
HAMILTON	0	1,196	119	1,315
HARDEE	139	4,623	0	4,762
HENDRY	939	1,000	4,324	6,263
HERNANDO	911	8,051	506	9,467
HIGHLANDS	2,176	275	6,137	8,588
HILLSBOROUGH	446	64,253	23,839	88,538
HOLMES	0	1,191	179	1,370
INDIAN RIVER	295	0	10,643	10,938
JACKSON	0	3,365	499	3,864
JEFFERSON	0	809	0	809
LAFAYETTE	111	0	647	758
LAKE	1,106	24,546	2,308	27,960
LEE	0	0	500	500



<b>TABLE 6-1 Hurricane Evacuation Shelter Spaces Identified Since 1995 (2)</b>				
<b>Totals Per County</b>	<b>As-Is or Pre-Mitigation ARC 4496 Capacity (persons)</b>	<b>EHPA 2018 Capacity Gained (persons)</b>	<b>Retrofitted / Mitigated Capacity Gained (persons)</b>	<b>Total 2018 ARC 4496 Spaces</b>
LEON	822	1,245	25,065	27,132
LEVY	0	354	5,104	5,458
LIBERTY	0	822	836	1,658
MADISON	0	0	4,236	4,236
MANATEE	0	13,625	3,127	16,752
MARION	629	10,257	7,301	18,187
MARTIN	4,686	10,047	5,847	20,580
MIAMI-DADE	17,733	20,007	50,054	87,794
MONROE	0	0	723	723
NASSAU	0	3,925	1,794	5,719
OKALOOSA	6,454	0	5,121	11,575
OKEECHOBEE	0	1,315	324	1,639
ORANGE	2,055	28,829	475	31,359
OSCEOLA	0	7,160	18,110	25,270
PALM BEACH	1,038	48,355	20,867	70,260
PASCO	166	14,844	5,412	20,422
PINELLAS	11,954	7,472	10,067	29,493
POLK	1,007	33,157	1,416	35,580
PUTNAM	0	1,271	3,495	4,766
SAINT JOHNS	6,517	4,811	6,299	17,627
SAINT LUCIE	3,584	4,388	9,413	17,385
SANTA ROSA	704	5,471	6,832	13,007
SARASOTA	1,278	5,019	2,243	8,540
SEMINOLE	1,087	1,206	29,134	31,426
SUMTER	367	200	719	1,286
SUWANNEE	0	3,484	50	3,534
TAYLOR	0	0	4,144	4,144
UNION	0	54	2,341	2,395
VOLUSIA	2,614	8,878	12,677	24,169
WAKULLA	0	800	0	800
WALTON	1,262	5,269	2,766	9,297
WASHINGTON	0	1,199	3,766	4,965
Grand Totals	109,293	465,675	464,500	1,039,468

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. As of 2010, all RPC regions are held to a statewide methodology statutorily mandated in §163.3178(2)(d)F.S.

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 Behavioral Data from the 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 alone are not evidence of a decrease in demand, they do show that under many circumstances public shelter demand is lower.

In 2017, Hurricane Irma resulted in 54 of 67 counties ordering evacuations. Approximately 3.8 million people were under evacuation orders but the shadow evacuation raised estimates to 6.8 million evacuees. Approximately 200,000 sheltered across the state.

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 statewide reduction in hurricane shelter space demand since 2000, which has resulted in a general decrease in the 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.

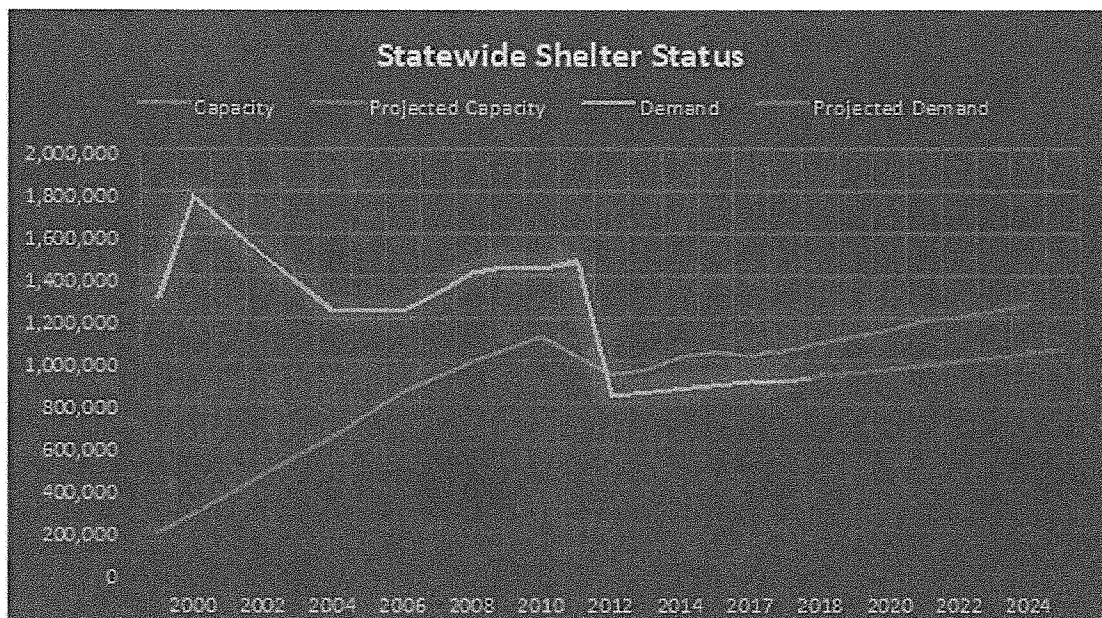
As seen in Table 6-1, since 1999 the Division's hurricane evacuation shelter survey and retrofit program has identified, created or otherwise documented 573,793 hurricane evacuation shelter spaces that meet ARC 4496 guidelines. Public school new construction programs have created an additional 465,675 hurricane evacuation shelter spaces. Therefore, Florida will have a total of 1,039,468 shelter spaces that meet ARC 4496 guidelines in 2018.

The demand for hurricane evacuation shelter space has also been significantly reduced over the past fourteen 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 43 counties with sufficient capacity of GP hurricane evacuation shelter space. The counties with sufficient GP space include: Alachua, Baker, Bay, Bradford, Brevard, Broward, Calhoun, Columbia, Dixie, Duval, Escambia, Flagler, Gadsden, Gilchrist, Glades, Hamilton, Hardee, Hendry, Hillsborough, Holmes, Indian River, Jackson, Jefferson, Lafayette, Lake, Leon, Levy, Liberty, Madison, Martin, Nassau, Okaloosa, Orange, Osceola, Palm Beach, Saint Johns, Saint Lucie, Santa Rosa, Seminole, Taylor, Union, Walton, and Washington.

There are fewer counties, 30, with a sufficient capacity of SpNS hurricane evacuation shelter space. The counties with a sufficient capacity of SpNS space include: Baker, Brevard, Broward, Citrus, Clay, Columbia, DeSoto, Escambia, Flagler, Gilchrist, Glades, Hamilton, Hardee, Hernando, Hillsborough, Indian River, Lafayette, Leon, Levy, Manatee, Martin, Miami-Dade, Osceola, Pasco, Putnam, Saint Johns, Santa Rosa, Union, Volusia 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 2018 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 1,039,468 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 study the trends in evacuating behavior, it is estimated that Florida's public hurricane evacuation shelter demand will continue to be reduced statewide. Since 2004, Florida's statewide aggregate public hurricane evacuation shelter space demand has been reduced to 959,397. 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 GP hurricane evacuation shelter space. Nine (9) 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 has been eliminated in the 2018 Plan, a "maintenance level" of shelter space production will be necessary to avoid falling back into a deficit situation.