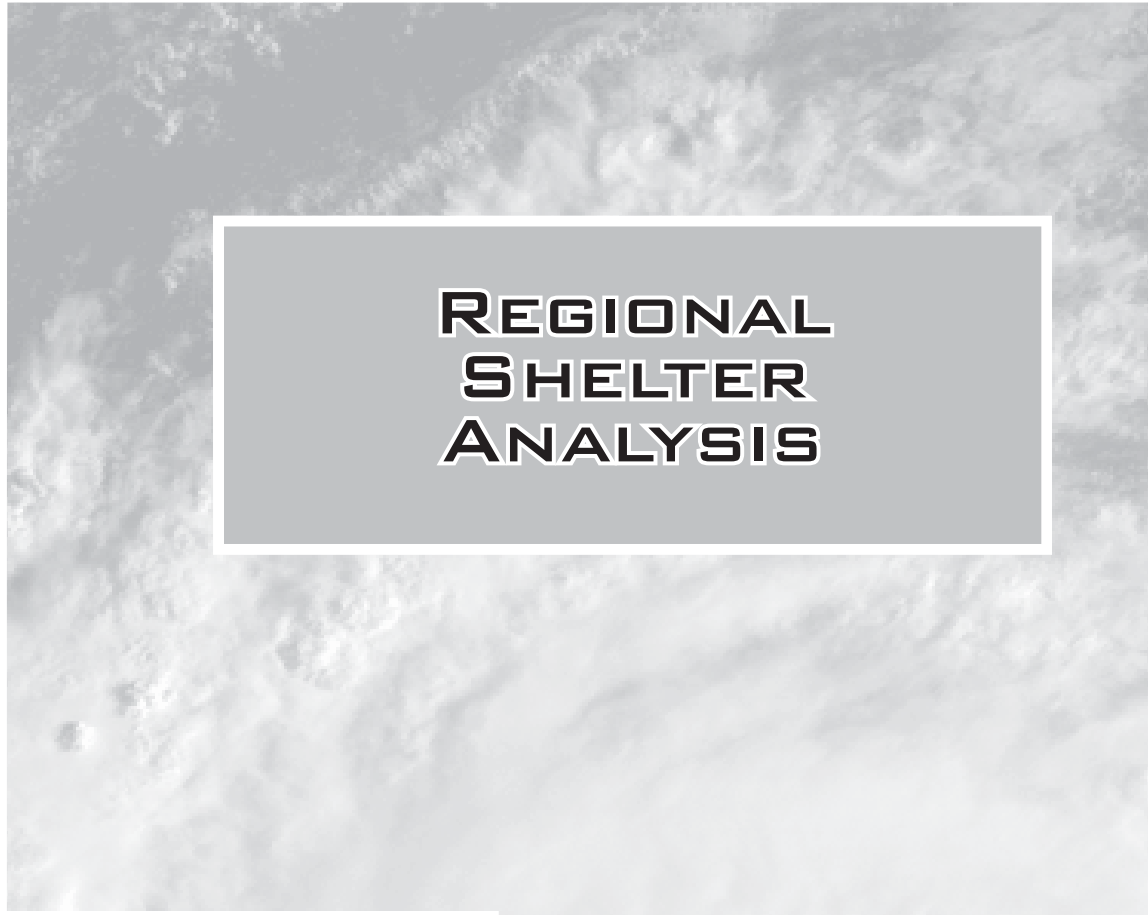




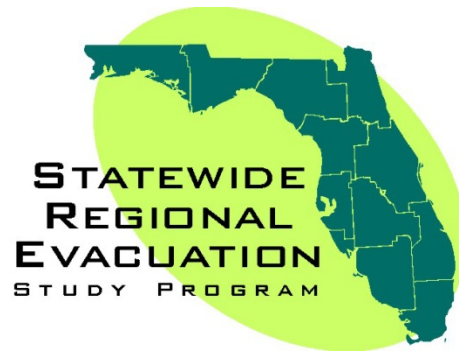
# FLORIDA STATEWIDE REGIONAL EVACUATION STUDY PROGRAM



## REGIONAL SHELTER ANALYSIS



This page intentionally left blank.



# Volume 1-9 Southwest Florida Region Technical Data Report

## CHAPTER V

### REGIONAL SHELTER ANALYSIS



This page intentionally left blank.



## Table of Contents

<b>V. Regional Shelter Analysis</b> .....	V-1
A. Overview .....	V-1
B. Hotel Availability .....	V-2
C. Providing Public Shelter .....	V-3
D. Criteria for Hurricane Evacuation Shelter .....	V-3
1. Storm Surge Inundation .....	V-3
2. Freshwater Flooding .....	V-4
3. Wind Hazards Vulnerability .....	V-5
4. Hazardous Materials .....	V-5
E. Hurricane Evacuation Shelter Selection Process .....	V-6
F. Least Risk Decision Making .....	V-7
1. The Selection Process .....	V-7
2. Interior Building Safety Criteria .....	V-8
G. Special Needs Shelters .....	V-8
1. Florida Statutes related to Special Needs Shelters .....	V-8
2. Special Needs Registration .....	V-9
3. Special Needs Population Criteria .....	V-9
4. Transportation Assistance for Special Needs .....	V-11
5. Standards for Hurricane Evacuation and Disaster Event Special Needs Shelter .....	V-11
6. Estimating Special Needs Shelter Demand .....	V-14
7. Other Considerations .....	V-18
8. Public Private Partnerships .....	V-20
H. Pets and Evacuees .....	V-21
1. Pet Issues are People Issues .....	V-21
2. Implementation Strategies .....	V-21
3. Policy Guidance to Residents .....	V-22
I. Shelter Inventories .....	V-22
J. Public Shelter Demand .....	V-33
K. Dealing with Shelter Shortfalls and Challenges .....	V-35

## List of Tables

Table V-1	Hotel Availability in Hurricane Scenarios .....	V-2
Table V-2	Population Demographics Affecting Special Needs Shelter Demand .....	V-15
Table V-3	Households with Special Needs .....	V-16
Table V-4	Households Registered as Having Special Needs .....	V-17
Table V-5	Households Needing Agency Assistance .....	V-17
Table V-6	Households with Special Needs Using Public Shelters .....	V-18
Table V-7	Special Needs Shelter Demand Guidance (2010 Operational Scenarios) .....	V-20
Table V-8A	Charlotte County Shelter Inventory and Surge Analysis .....	V-24
Table V-8B	Collier County Shelter Inventory and Surge Analysis .....	V-24
Table V-8C	Glades County Shelter Inventory Surge Analysis .....	V-27
Table V-8D	Hendry County Shelter Inventory and Surge Analysis .....	V-28
Table V-8E	Lee County Shelter Inventory Surge Analysis .....	V-29
Table V-8F	Sarasota County Shelter Inventory and Surge Analysis .....	V-30
Table V-9a	Public Shelter Demand for Hurricane Evacuation Base Scenarios 2015 .....	V-33
Table V-9b	Public Shelter Demand for Hurricane Evacuation Operational Scenarios 2015 .....	V-34
Table V-9c	Public Shelter Demand for Hurricane Evacuation Base Scenarios 2020 .....	V-34
Table V-9d	Public Shelter Demand for Hurricane Evacuation Operational Scenarios 2020 .....	V-35

This page intentionally left blank.





# CHAPTER V REGIONAL SHELTER ANALYSIS



## A. Overview

An essential element of any evacuation plan is the ability to shelter the relocated residents throughout the duration of the event. Evacuees will seek several alternative forms of shelter at various distances from their origin. These alternatives may include a local public shelter, a hotel or motel, a friend or relative's home, and destinations in an adjacent county or outside of the region. Shelter destination tendencies of potential evacuees must be identified for two major reasons. First, so that adequate public shelter facilities can be provided for the numbers of evacuees expected to seek them. Secondly, the shelter analysis is needed to more accurately simulate the expected destination assignments and vehicle volume movement in the quantification of evacuation times.

Shelter preparedness is a very crucial element in the Statewide Regional Evacuation Study (RES) because of the vast numbers of evacuees and the potential number of vulnerable residents seeking shelter. While other types of hazards (flooding, wildfire, hazardous materials and terrorism/civil disturbances) may result in the need for mass care and shelter operations, the event which is both the most probable and potentially most challenging is an approaching hurricane.

Historically, major disasters result in large scale shelter operations. For example, operations during the Hurricane Andrew evacuation in August 1992 resulted in the largest county shelter operation in US history (approximately 200,000 sheltered). One of the largest regional evacuation shelter operations in the U.S. occurred in the Tampa Bay region in response to Hurricane Elena in 1985 (350,000 sheltered). In 2005 when hurricanes threatened the Gulf Coast, Red Cross disaster relief workers and local governments were preparing hundreds of evacuation shelters. The organization pre-positioned supplies, including kitchens, prepackaged meals and emergency response vehicles (ERVs). Nearly 500,000 evacuees of Hurricanes Katrina, Rita and Wilma stayed in Red Cross shelters ([www.redcross.org](http://www.redcross.org)).

Pre-storm evacuation shelter demand has significantly decreased in Southwest Florida as well as other areas. Public education in Florida has stressed to evacuees that the choice to go to a public shelter should not be the first choice in destinations. Other options – especially the homes of friends and relatives and hotel/motels in non-evacuation zones – provide a more comfortable alternative for most residents. According to the behavioral surveys conducted in 2006 and 2008 for the Statewide Regional Evacuation Study Program, part of that message is getting across to residents. The majority of evacuees go to the homes of friends or relatives (36 – 37%). Approximately 18% - 20% will seek a hotel or motel for refuge depending on age, income and other demographic characteristics. Hotel availability will also be a key factor.

## B. Hotel Availability

In the Southwest Florida Region there are a total of 52,210 hotel/motel rooms (2010). These facilities are identified in the Critical facility Inventory database and their locations within vulnerable areas (tropical storms and hurricanes, flood zone, wildfire and hazardous materials) are identified.

More than half of the inventory in Charlotte, Collier and Lee counties is within Evacuation Level A Category 1 storm surge area so it would not be available for any hurricane evacuation scenario. Regionally, in a category 5 hurricane threat, only approximately 2,449 rooms should be available. (See Table V-1 below)

Some of the Tourist and Visitors Bureaus in major metropolitan areas currently have a mechanism in place to track available units throughout a regional evacuation. This capability is essential to assist those evacuees looking for hotel/motel units. (Although it should be strongly recommended that families seeking accommodations make those reservations before they begin their evacuation trip.) In a major evacuation, the State Tourism and Development Council will seek to consolidate and augment this local information in real time. The second major challenge is to then communicate hotel/motel availability within the region and the state to evacuees locally as well as those on the road. This may reduce the trip of those searching for hotel/motels in the vicinity; thereby, hopefully reducing the evacuation congestion and clearance times.

**Table V-1: Hotel Availability in Hurricane Evacuation Scenarios**

Storm Surge Area (Category)	Charlotte Room Availability	Collier Room Availability	Glades Room Availability	Hendry Room Availability	Lee Room Availability	Sarasota Room Availability	Regional Room Availability
A	1,748	5,343	244	605	7,318	9,285	24,543
B	523	2,873	215	586	3,593	5,866	13,656
C	335	859	211	586	913	4,025	6,929
D	NA	668	148	563	189	3,065	4,633
E	NA	668	120	549	154	958	2,449

Source: Florida Dept. of Professional and Business Regulations, 2010

## C. Providing Public Shelter

Although there are other options for most evacuees, there will always be a demand for public shelter. The demand for public shelter has the potential to be significant in the Southwest Florida region because of the magnitude of the evacuation population, the demographics of the population and limited ability to evacuate out of the region.

Public shelter demand is the result of several factors:

- Evacuees may not have friends or relatives in a safe location.
- Evacuees may not have the means to evacuate to a hotel/motel or out of the region.
- Evacuees may not be able to locate vacant hotel/motel rooms outside of evacuation zones in the region. (Space is limited and demand will be high.)
- Evacuees may not plan ahead or understand their options.
- Some evacuees choose public shelter because they feel it is safer there than in their home.
- Some evacuees may wish to be with others.
- Evacuees may not evacuate in a timely fashion or may get stuck in evacuation traffic and may have to seek public shelter at the last minute as a last resort.

## D. Criteria for Hurricane Evacuation Shelter Selection

Shelter selection involves a number of factors - structural and non-structural - and requires close coordination with local officials responsible for public safety. Technical information contained in evacuation studies, storm surge and flood mapping, and other data can now be used to make informed decisions about the suitability of shelters. Accordingly, an interagency group under American Red Cross leadership, has prepared criteria for the selection of shelters and printed as *ARC 4496, July 1992*.

In the experience of the Red Cross and emergency management officials, the majority of people evacuating because of a hurricane threat generally provide for themselves and seek hotels or motels or stay with friends and relatives. However, for those who do seek public shelter, safety from hazards associated with hurricanes is paramount. These hazards include surge inundation, rainfall flooding, high winds, and hazardous materials.

Recommended guidelines for each of these hazards follow:

### 1. Storm Surge Inundation

In general, hurricane evacuation shelters should not be located in areas vulnerable to hurricane surge inundation. The National Hurricane Center SLOSH model for the Southwest Florida Region is very helpful in determining the potential level of surge inundation in this area. Within ARC 4496, the guidelines state the following:

- *Carefully review inundation maps in order to locate all hurricane evacuation shelters outside (Category 4) storm surge inundation zones, if possible.*

- *Avoid buildings subject to isolation by surge inundation in favor of equally suitable buildings not subject to isolation. Confirm that ground elevations for all potential shelter facilities and access routes obtained from topographic maps are accurate.*
- *Do not locate hurricane evacuation shelters on barrier islands.*

To determine whether particular public shelter structures are vulnerable to future potential storm surge, an analysis of each structure's elevation and geographic location in relation to surge was conducted utilizing the SLOSH model.

The results of this analysis for each county are presented on Tables V-8A – V-8F. The magnitude of the storm surge values shown in each hurricane category column on the tables are in relation to mean sea level. They represent the predicted maximum height of surge from that particular category of hurricane on the Saffir-Simpson Scale. Additionally, the surge height values were increased by one-foot for the expected tidal anomaly as well as a one-foot addition for a potential high astronomical tide (total 2 feet).

Although most sites were not projected to receive storm surge flooding under any evacuation scenario, in some areas, because of potential shelter shortage, shelters remain on primary shelter inventories even though they will not be utilized in the most severe of storms (evacuation levels D and E).

## **2. Freshwater Flooding**

While it is not historically considered life-threatening, rainfall flooding should be considered in the hurricane evacuation shelter selection process. Riverine inundation areas shown on Flood Insurance Rate Maps (FIRMs), as prepared by the National Flood Insurance Program, should be reviewed. FIRMs should also be reviewed in locating shelters in inland areas. ARC Guidelines state:

- *Avoid, where possible, hurricane evacuation shelters within the 100-year floodplain.*
- *Avoid hurricane evacuation shelters in areas likely to be isolated due to riverine inundation of roadways.*
- *Make sure a hurricane evacuation shelter's first floor elevation is equal to or higher than that of the base flood elevation level for the FIRM area.*
- *Consider the proximity of shelters to any dams and reservoirs to assess flow upon failure of containment following hurricane-related flooding.*

The appropriate flood plain designation is identified on the tables along with the storm surge analysis. While locating facilities outside of the 100-year floodplain is a priority, this is very difficult in the Southwest Florida region. Therefore, measures such as documenting the elevation of the first floor above the base flood elevation (BFE), meeting NFIP regulations and the provision of adequate emergency supplies sufficient to

meet the immediate response needs until flood waters recede, etc. are ensured. Please note: The ARC 4496 guidelines also recommend avoiding the 500-year floodplain.

### 3. Wind Hazards Vulnerability

Consideration of any facility for use as a hurricane evacuation shelter must take into account wind hazards. Both design and construction problems may preclude a facility from being used as a shelter. Structural Considerations identified in ARC 4496 include:

*Avoid uncertified buildings of the following types:*

- *Buildings with long or open roof spans, i.e., gymnasiums and cafeterias*
- *Un-reinforced masonry buildings*
- *Pre-engineered (steel pre-fabricated) buildings built before the mid-1980s*
- *Buildings that will be exposed to the full force of hurricane winds*
- *Buildings with flat or lightweight roofs*

*Give preference to the following:*

- *Buildings with steep-pitched, hipped roofs, or with heavy concrete roofs*
- *Buildings more than one story high (if lower stories are used for shelter)*
- *Buildings in sheltered areas not subject to "lay down" hazards*
- *Buildings whose access routes are not tree lined nor subject to flooding*

The State of Florida has an aggressive survey program for all structures considered for public shelter use. State and County work with local school boards and emergency management agencies to identify structures for retrofit and to implement the requirements of the Enhanced Hurricane Protection Areas (EHPA) in new school construction. The requirements and retrofit projects have dramatically increased the public shelter capacity in the region since 2000.

### 4. Hazardous Materials

The possible impact from a spill or release of hazardous materials should be taken into account when considering any potential hurricane evacuation shelter. All facilities manufacturing, using, or storing hazardous materials (in reportable quantities) are required to submit Material Safety Data Sheets (emergency and hazardous chemical inventory forms) to the Local Emergency Planning Committee (LEPC) and the local fire department. These sources can assist in determining the suitability of a potential hurricane evacuation shelter or determining precautionary zones (safe distances) for facilities near potential shelters that manufacture, use, or store hazardous materials.

- *Facilities that store certain types or quantities of hazardous materials may be inappropriate for use as hurricane evacuation shelters.*
- *Hurricane evacuation shelters should not be located within the ten-mile emergency planning zone (EPA) of a nuclear power plant (not applicable in Southwest Florida region).*

- *Service delivery units must work with local emergency management officials to determine if hazardous materials present are a concern for potential hurricane evacuation shelters.*

Those (Section 302) facilities with extremely hazardous materials on-site have been identified in relation to schools and hospitals. This information is contained in the Critical Facilities Inventory database.

## E. Hurricane Evacuation Shelter Selection Process

General procedures for investigating the suitability of a building or facility for use as a hurricane evacuation shelter are as follows:

1. Identify potential sites. Evacuation and transportation route models must be considered.
2. Complete a risk assessment for each potential site. Gather all pertinent data from the SLOSH model (storm surge), FIRM (flood hazard), facility base elevation, hazardous materials information, and previous studies concerning each building's suitability.
3. Inspect the facility and complete a *Red Cross Facility Survey Form* and a *Self-Inspection Work Sheet/Off-Premises Liability Checklist* in accordance with ARC 3031. Note all potential liabilities and the type of construction. Consider the facility as a whole; one weak section may seriously jeopardize the integrity of the building.
4. Have a structural engineer review the facility and rate its suitability.
5. Ensure that an exhaustive search for shelter space has been completed. Work with local emergency management officials and others to identify additional potential sites.
6. Review, on a regular basis, all approved hurricane evacuation shelters. Facility improvements, additions, or deterioration may change the suitability of a selected facility as a hurricane evacuation shelter. Facility enhancements may also enable previously rejected facilities to be used as hurricane evacuation shelters.
7. If possible, work with officials, facility managers, and school districts on mitigation opportunities. Continue to advocate that the building program for new public buildings, such as schools, should include provisions to make them more resilient to possible wind damage. It may also be possible to suggest a minor modification of a municipal, community, or school building, such as the addition of window protection in the planning stages, to make for a more useful hurricane evacuation shelter site.

## F. Least Risk Decision Making

Safety is the primary consideration in providing hurricane evacuation shelters. When anticipated demands for hurricane evacuation shelter spaces exceed suitable capacity as defined by the preceding criteria, there may be a need to utilize *marginal* facilities. It is critical that these decisions are made carefully by a team including representatives from county emergency management agencies, the local chapter of the American Red Cross, School Board and engineering professionals.

### 1. The Selection Process

The process should include the following considerations:

- All hurricane evacuation shelters should be located outside of storm surge inundation areas. Certain exceptions may be necessary but only if there is a high degree of confidence that the level of wind, rain, and surge activities will not surpass established shelter safety margins.
- When a potential hurricane evacuation shelter is located in a flood zone, it is important to consider its viability. By comparing elevations of sites with FIRMs, one can determine if the shelter and a major means of egress are in any danger of flooding. It is essential that elevations be carefully checked to avoid unnecessary problems.
- In the absence of certification or ranking by a structural engineer, any building selected for use as a hurricane evacuation shelter must be in compliance with all local building and fire codes.
- The Red Cross and State of Florida use the planning guideline of 20 square feet of space per shelter resident. During hurricane conditions, on a short-term basis, shelter space requirements may be reduced. Ideally, this requirement should be determined using no less than 20 square feet per person; however, some counties use 10-15 square feet as the standard. Before and after the hurricane strike, evacuees will be allowed to use gymnasiums, auditoriums, etc. However, once a hurricane is affecting the area, all evacuees will be moved to safer areas of the shelter. For the duration of the storm, 8-10 hours, the 10-15 square foot per person may have to be adequate until additional shelter space becomes available. In addition, sufficient space must be set aside for registration, health services, and safety and fire considerations. On a long-term recovery basis, shelter space requirements should follow guidelines established in ARC 3031, *Mass Care: Preparedness and Operations*.



## 2. Interior Building Safety Criteria During Hurricane Conditions

Based on storm data such as the arrival of tropical force winds (sustained 40 mph winds), a notification procedure developed with local emergency managers is implemented as to when to move the shelter population to pre-determined safer areas within the facility. The following guidelines are considered:

- *Do not use rooms attached to, or immediately adjacent to, un-reinforced masonry walls or buildings.*
- *Do not use gymnasiums, auditoriums, or other large open areas with long roof spans during hurricane conditions.*
- *Avoid areas near glass, unless the glass surface is protected by an adequate shutter. Assume that windows and roof will be damaged and plan accordingly.*
- *Use Interior corridors or rooms.*
- *In multi-story buildings use only the lower floors and avoid corner rooms. Avoid basements if there is any chance of flooding.*
- *Avoid any wall section that has portable or modular classrooms in close proximity, if these are used in the community.*

## G. Special Needs Shelters

A special needs shelter is a temporary emergency facility capable of providing care to residents whose medical condition exceeds the capabilities of the Red Cross Shelter but is not severe enough to require hospitalization. Health Department medical staff support these shelters.

The State of Florida Division of Emergency Management, Department of Health, local emergency management agencies, health care agencies have worked together over the last decade to establish Special Needs Shelter standards, protocols and technical assistance that can be integrated into the Florida Emergency Management System. <sup>1</sup>



The mission is to develop a standardized, comprehensive, county and regional approach to Special Needs Shelter operation that ensures continuity in services and quality care to clients, caregivers and staff during their stay in a Special Needs Shelter.

1. **Florida Statutes related to Special Needs Shelters**
  - a. [F.S. Ch. 252.355](#) - Registry of persons with special needs; notice.

<sup>1</sup> <http://www.doh.state.fl.us/PHNursing/SpNS/SpecialNeedsShelter.html>

*This has been recently updated (2015) and includes language that the Florida Division of Emergency Management, in coordination with each local emergency management agency in the state, shall maintain a registry of persons with special needs.*

- b. [F.S. Ch. 252.356](#) - Emergency and disaster planning provisions to assist persons with disabilities or limitations.
- c. [F.S. Ch. 381.0303](#)- Healthcare Practitioner Recruitment for Special Needs Shelters
- d. [FAC 64-3](#) - Florida Administrative Code related to Special Needs Shelter

## 2. Special Needs Registration

In order to accommodate residents who need evacuation assistance to a Special Needs Shelter, **it is most important that they register prior to June 1st in advance of hurricane season.** This will help in determining which shelter they should go to and what, if any, assistance they require to evacuate. This would include transportation disadvantaged residents who need transportation assistance only.

Residents who feel they may qualify are instructed to complete a Special Needs Evaluation form. The forms should be mailed, e-mailed or faxed to the county office designated to maintain the special needs registration list.

When residents fill out a registration form the County Health Department determines if the special needs shelter is the most appropriate level of care and advises the resident directly or through the local emergency management or fire department.

## 3. Special Needs Population Criteria

- a. **The individual meets the medical criteria for assignment to the Special Needs Shelters if:**
  - They are unable to administer their own frequently required or daily injectable medicines.
  - They require daily or more frequent dressing changes because of moderate or copious drainage from ulcers, fistulas, or other similar problems.
  - They need assistance with ostomy management and indwelling catheters of any kind.
  - Activities of daily living are so restricted by immobility that others provide assistance to meet their basic needs and those people are unavailable at this time. Please note that special needs shelters cannot accept bedbound patients.

- They require daily assessment of a (stable) medical condition by professional nursing personnel or other similar conditions.
  - They have a respiratory condition which requires special equipment such as monitors or oxygen. Counties may have a limit to the number of liters of oxygen at shelters.
  - They have a terminal illness but are ambulatory and in need of professional assistance in administering heavy doses of pain medicine (HOSPICE).
  - In some counties, individuals will receive notification by the County Health Department, assigning them to a Special Needs Shelter. ***People assigned to the Special Needs Shelter will need to take any medication, equipment or articles of comfort they routinely use.***
  - They are elderly, homebound or alone and need assistance in relocating to a shelter.
- b. **The following people SHOULD NOT go to a special needs shelter; unless otherwise stated, they should go to a hospital:**
- Pregnant woman within six weeks of estimated day of delivery, or who are in labor.
  - Individuals suffering from acute infection or infestation.
  - Those having an immediate medical or emergency condition.
  - Bedridden patients
  - Individuals with a tracheotomy that requires frequent suctioning
  - Individuals on a ventilator
- c. **When evacuating to a shelter, evacuees are told to bring the following:**
- **All Required Medications and Medical Support Equipment:** Wheel chair/walker, oxygen, dressings, feeding equipment, ostomy supplies, etc. Any specific medication or care instructions. Name, phone number of physician/home health agency/hospital where they receive care.
  - **Special Dietary Needs:** Only regular meals will be provided.
  - **Sleeping Gear:** Pillows, blankets, portable cot or air mattress, folding chairs.
  - **Important Papers:** Insurance papers, doctors' orders.
  - **Identification:** With photo and current address.
  - **Cash:** Check cashing/credit card services may not be available for several days after the storm. However, please remember that there will be nowhere to secure money or valuables at the shelter.

- **Comfort items:** Personal hygiene items, snacks, small games, cards, etc.
- **Extra Items:** An extra set of comfortable clothing and a few extra sets of underwear, socks, towel, washcloths, soap, toothbrush and adult diapers.

#### **4. Transportation Assistance for Special Needs**

Once enrolled, residents with medical special needs are the first to be evacuated. Timing is crucial during the first phases of an emergency and plays a critical role in assuring they get out long before disaster strikes. The type of evacuation transportation assistance is determined when the resident is registered.

#### **5. Standards for Hurricane Evacuation and Disaster Event Special Needs Shelter (Special Needs Shelter) Selection<sup>2</sup>**

Facilities selected as special needs shelters should meet additional structural criteria as well as shelter management standards. New legislation has identified special criteria for Special Needs Shelters which prove to be a challenge for local governments. In addition to meeting the ARC 4496 hurricane safety criteria, Special Needs Shelters should have emergency power supported air-conditioning and have capacities based upon 60 square feet per client. The State Division of Emergency Management and local agencies are working together to address the challenges of the transition to meeting these expectations as well as the resolving problems related to Special Needs Shelter.

##### **a. Special Needs Shelter Design Criteria**

Department of Health (DOH) guidance for design and selection of facilities to be used as a Special Needs Shelters (Special Needs Shelter) in a hurricane/disaster event shall be consistent with the American Red Cross publication "MASS CARE—Preparedness and Operations (ARC 3041)" and "Mass Care Facility Form 6564." The Special Needs Shelter facility must also meet all Florida Building Code (FBC) and Americans with Disabilities Act (ADA) accessibility requirements.

##### **b. Special Needs Shelter Occupancy Period**

For planning purposes it is assumed that the Special Needs Shelter will be occupied at its maximum occupant capacity for, at a minimum, a continuous seventy-two (72) hour period during and post impact by a major hurricane (i.e., Category 3 or higher). It should also be assumed that the Special Needs Shelter may be occupied for 12 hours in advance of arrival of hurricane force winds.

---

<sup>2</sup> Created: 10/14/05

Revised: 11/16/05; 01/20/06

J:\HPHN\SpNS\Mitigation\SpNS Facilities\SpNS Facility Standards\SpNS-FacilityStds-01.20.06.doc

c. **Special Needs Shelter Structural Requirements**

Special Needs Shelter Structural Requirements shall at a minimum be consistent with the *American Red Cross publication "Standards for Hurricane Evacuation Shelter Selection (ARC 4496)." Preference shall be given to school facilities designed, constructed and inspected to comply with the public shelter design criteria, Enhanced Hurricane Protection Area (EHPA) requirements as set forth in section 423.25, Florida Building Code.*

d. **Location and Site Requirements- Emergency Access**

Each Special Needs Shelter should have at least two (2) major means of access for emergency vehicles. The additional need for access is due to the potential for medical emergencies associated with the fragile health conditions of the Special Needs Shelter client population. The Special Needs Shelter openings provide a means of emergency access and/or evacuation. These openings should be well supervised to monitor for safety and/or security threat to the Special Needs Shelter occupants. All occupants of the building should be within a reasonable distance from these access/exit points, providing a choice in direction of escape in case of fire. All exits should be clearly marked and visible.

e. **Special Needs Shelter Capacity**

Calculations to determine the capacity of a Special Needs Shelter are identical to the EHPA calculations except that the number of square feet required for each occupant is 60 square feet.

f. **Plumbing and Sanitation**

(1) **Potable Water.** Given the planning assumption that the Special Needs Shelter will be open for a minimum of 72 hours during and post impact by a major hurricane, the Special Needs Shelter should have a minimum of five (5) gallons of potable water per person per day for all uses (i.e., drinking water, hygiene, food preparation, etc.)

(2) **Toilets, Sinks, Showers, Waste Water and Garbage Disposal.** Requirement criteria remain equal to ARC 3041 and EHPA requirements, with the exception of the waste water reservoir capacity and garbage disposal plan shall be based on a 72-hour design occupant capacity.

(3) **Electrical and Emergency Power Systems.** It should be assumed that utility power outages will occur and may continue for the duration of Special Needs Shelter operation. Due to the fragile health and medical condition of the Special Needs Shelter clients, it is imperative that the Special Needs Shelter have back-up emergency electric power system.

- The emergency electric power system shall be capable of supporting life safety, branch outlet and lighting circuits, air conditioning and other systems that are critical to the well-being of the clients, staff and caregivers. The absence of air conditioning can result in the deterioration of the Special Needs Shelter client's health status. Clients with chronic lung disease deteriorate at a rapid pace as the increase of temperature leads to increased breathing difficulty.
- The power grid and backup emergency electric power capability must also be sufficient to power receptacles utilized to run oxygen concentrators, oxygen nebulizers and other medical equipment. (Note: Oxygen concentrators draw an average of 3.5-5.5 amps per unit. Nebulizers are used intermittently and have a negligible power draw.) Additional lighting (fixed or mobile) may be needed for providing client care (i.e., wound care, dressing change, etc.) and should be considered when determining power capacity.
- Appropriately trained and equipped personnel should be present and on site at all times during the Special Needs Shelter occupancy to operate, maintain and repair the generator(s). Sufficient supplies chosen by appropriately trained personnel must be available to route the power to where it is needed, (i.e., extension cords of adequate size, plug strips, tape to secure cords to the floor, etc.).
- Sufficient fuel stores should be available for 72-96 hours of continuous generator use at full load.
- Generators should be tested after each significant incident and on a monthly basis or as recommended by manufacturer if more frequent. Sites on facility grounds (i.e., lift stations) should have quick connects (as appropriate) to provide for utilization of backup power generation equipment.

**g. Emergency Management Considerations**

(1) **Posting Special Needs Shelter floor plan.** A copy of the floor plan must be posted for planning purposes.

(2) **Food service planning** should provide for the assumption of a minimum of 72 hours for Special Needs Shelter occupancy. Additional consideration for clients with special dietary/metabolic health issues should be factored into food service planning; however it is very difficult

to predict all the different types of dietary restrictions. Residents are told to bring their own food supply if they have a special or restrictive diet.

(3) **Supplemental Space Allocations.** Additional space allocations should be considered for the following:

- Safe play areas for children.
- Special Needs Shelter clients with ambulatory difficulties may need additional space for assistive devices (i.e., wheelchairs and walkers). These clients may also need to be provided space allocation on the ground floor or in areas free from level changes.
- Special Needs Shelter clients with service animals may need to be provided a separate area or away from the general Special Needs Shelter client population.
- Quarantine areas for clients requiring isolation precautions. Respiratory isolation areas to be designated and assigned at each Special Needs Shelter prior to occupancy by appropriately trained/experienced personnel.
- Appropriate space should be provided for the safe storage and movement of compressed gasses (i.e., oxygen tanks, liquid oxygen) or other Special Needs Shelter equipment and supplies.

## 6. Estimating Special Needs Shelter Demand

Estimating the demand for special needs shelter space is challenging for state and local emergency management officials. Certain key assumptions must be made and complexities addressed:

### a. County and Regional Profiles

The demographics of the county and region must be considered, especially age, disability and income. Typically, the older the overall population of the county/region, the older the shelter population and greater the demand for public shelter. Historically, the demographics of the general and special needs shelter populations have been skewed based on age, disability and income. Therefore, the shelter populations may reflect trends but will not match the overall demographic profile of the county or region. Both the general shelter population and, more definitively, the special needs population, will tend to be much older, with more disabilities and with fewer financial resources.

Below is a table which reflects the demographics of the county and region (See Chapter I Population and Demographics). Please note the differences between counties in the region. The differences in age and percentage with disabilities will impact the potential demand for special needs shelter.





Table V-2

## Population Demographics Affecting Special Needs Shelter Demand

Jurisdiction	Percentage 65+ 2010 <sup>3</sup>	Percentage 65+ 2015 <sup>4</sup>	Percentage with Disabilities <sup>5</sup>	Percentage with Disabilities age 65 +	Percentage with Disabilities age 75+
Charlotte	33.67%	34.94%	20.16%	20.55%	49.98%
Collier	23.83%	25.55%	12.90%	17.44%	36.57%
Glades	18.06%	18.92%	NA	NA	NA
Hendry	10.38%	10.86%	NA	NA	NA
Lee	23.69%	25.54%	13.83%	20.16%	42.66%
Sarasota	31.09%	33.31%	18.37%	18.63%	42.74%
Region	26.19%	27.92%	NA	NA	NA

### b. Special Needs Population Data from the Behavioral Survey

The behavioral survey of Florida residents completed as part of the Statewide Regional Evacuation Study contained four questions designed to elicit information regarding the prevalence of "special needs" households:

- In an evacuation, would you or anyone in your household require assistance in order to evacuate?
- Would the person just need transportation, or do they have a disability or medical problem that would require special assistance?
- Would that assistance be provided by someone within your household, by an outside agency, or by a friend or relative outside your household?
- Is that person registered with the County as a person who would have special needs during a hurricane evacuation?

<sup>3</sup> EDR1a

<sup>4</sup> EDR1a

<sup>5</sup> The data on disability status were derived from answers to two long-form questionnaire items. The first was a two-part question that asked about the existence of the following long-lasting conditions: (a) blindness, deafness, or a severe vision or hearing impairment (sensory disability) and (b) a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying (physical disability). This question was asked of a sample of the population 5 years old and over. The second was a four-part question that asked if the individual had a physical, mental, or emotional condition lasting 6 months or more that made it difficult to perform certain activities. The four activity categories were: (a) learning, remembering, or concentrating (mental disability); (b) dressing, bathing, or getting around inside the home (self-care disability); (c) going outside the home alone to shop or visit a doctor's office (going outside the home disability); and (d) working at a job or business (employment disability). Categories (a) and (b) were asked of a sample of the population 5 years old and over; (c) and (d) were asked of a sample of the population 16 years old and over. For data products that use a disability status indicator, individuals were classified as having a disability if any of the following three conditions were true: (1) they were 5 years old and over and had a response of "yes" to a sensory, physical, mental or self-care disability; (2) they were 16 years old and over and had a response of "yes" to going outside the home disability; or (3) they were 16 to 64 years old and had a response of "yes" to employment disability.

Responses to all four questions are reported in the Statewide Regional Evacuation Study Behavioral Survey Reports for each planning region of Florida. In those reports responses are shown by region, county, evacuation zone, and housing type. The tables below show responses for the entire statewide sample. However, the responses do not constitute a statewide random sample of households. In every coastal county, regardless of population, 400 interviews were completed. In every non-coastal county 150 interviews were completed. Therefore smaller counties were “over-represented” statistically when the data is aggregated statewide.

### (1) Households with Special Needs

Statewide 6.1% of the interviewees said that someone in their home had a disability or medical problem that would require special assistance, beyond requiring just transportation (Table V-3). The figure included people with those needs but who also needed transportation. Those needs were greater in mobile homes than in site-built homes. In site-built homes the needs were lower in category 1 evacuation areas than in other evacuation zones.

**Table V-3**

**Percentage of households having someone with a disability or medical condition requiring assistance in order to evacuate (by evacuation zone and housing)**

Type of Housing	Evacuation Zone						
	Cat 1	Cat 2	Cat 3	Cat 4-5	Coastal Non-Surge	Non-Coastal	All Zones
Site Built Homes	4.4	6.3	6.0	6.1	5.9	6.5	5.6
Mobile Homes	8.7	6.3	13.9	8.1	8.1	8.2	8.6
All Housing	5.0	5.8	7.4	6.3	6.3	6.9	6.1

### (2) Households Registered as Having Special Needs

Approximately 2.2% of the surveyed households indicated that anyone in the home was registered with their county as a person with special needs in a hurricane evacuation (Table V-4). The figure was higher for mobile home residents than site-built residents, but there was no clear trend with respect to evacuation zone. **However, from the list of registrants with the county emergency management agencies or county departments of health, there are less than 1% of the general population registered for special needs and transportation assistance. In fact, the actual number of registrants is less than 24% of the number answering that they are registered as a person with (medical) special needs.**

Table V-4

Percentage of households having someone with a disability or medical condition requiring assistance in order to evacuate AND registered with county as special needs (by evacuation zone and housing)

Type of Housing	Evacuation Zone						
	Cat 1	Cat 2	Cat 3	Cat 4-5	Coastal Non-Surge	Non-Coastal	All Zones
Site Built Homes	1.6	2.1	1.3	2.5	1.8	2.5	2.0
Mobile Homes	3.6	1.9	3.7	4.0	4.1	3.0	3.3
All Housing	1.9	2.0	1.7	2.7	2.2	2.6	2.2

### (3) Households Needing Agency Assistance

Two percent of all households said that assistance from an agency (rather than assistance from a friend or relative) would be needed to help a person with a disability or medical problem evacuate (Table V-5). Some respondents said they didn't know who would provide the assistance. Both calculations were higher for mobile homes than for site-built homes.

Table V-5

Percentage of households having someone with a disability or medical condition requiring assistance in order to evacuate AND requiring assistance from an agency (by evacuation zone and housing)

Type of Housing	Evacuation Zone						
	Cat 1	Cat 2	Cat 3	Cat 4-5	Coastal Non-Surge	Non-Coastal	All Zones
Site Built Homes	1.4	1.8	1.6	1.8	2.0	2.5	1.9
Mobile Homes	3.2	1.3	3.3	3.0	3.9	2.2	2.7
All Housing	1.6	1.7	1.9	1.9	2.3	2.4	2.0

### (4) Households with Special Needs Using Public Shelters

One of the questions asked specifically about special needs sheltering. However, all respondents were asked if they would go to a public shelter when they evacuated. 1.4% of the interviewees said BOTH that they would evacuate to a public shelter AND that they had someone in the home with a disability or medical problem who would require evacuation assistance. Residents in mobile homes were twice as likely as residents in site-built homes to reply affirmatively to both questions. Among those in site-built homes the rate increased as evacuation zones progressed inland. Among people mobile homes the spatial trend was less consistent but the rate was greater inland of the category 1 and 2 zones.

Table V-6

Percentage of households having someone with a disability or medical condition requiring assistance in order to evacuate AND intends to evacuate to a public shelter

Type of Housing	Evacuation Zone						
	Cat 1	Cat 2	Cat 3	Cat 4-5	Coastal Non-Surge	Non-Coastal	All Zones
Site Built Homes	.7	.8	1.5	1.3	1.4	1.9	1.2
Mobile Homes	1.4	1.3	3.7	3.0	2.0	3.2	2.5
All Housing	.8	.9	1.8	1.5	1.5	2.2	1.4
Charlotte County							3.0
Collier County							2.2
Glades County							.7
Hendry County							3.3
Lee County							1.5
Sarasota County							3.5

It is difficult to determine the most appropriate way to use these survey results. While the study provided an estimate of demand for special needs shelter for the first time based on a statewide survey, there are concerns:

- The general public interviewed in the statewide survey does not understand the complexities of the concept of “special needs” as used in emergency shelter planning. While residents may have medical needs, they would need to be screened in order to determine the most appropriate type and level of care. For example, a hospital, nursing home, ALF, etc. may be a more appropriate setting.
- Historically, respondents over-estimate the demand for any public shelter option.
- Demand will vary by storm severity and evacuation rates.
- Demand will be higher based on housing type (MH), age and income.
- The number of respondents to these questions was very low at the county level.

## 7. Other considerations

A report was generated after the 2004 and 2005<sup>6</sup> hurricane seasons which identified that a significant portion of the registered special needs populations found alternative shelter and/or elected not to go to the special needs shelter during the event. This trend has been identified in many recent evacuations. The report stated that “the statewide total of registrants is about 38,500, but local emergency managers estimate that only about 14,000 clients will actually seek public Special Needs Shelters. In 2004 the DOH’s maximum census (summation of all individual counties’ highest single day totals, plus the Orlando super shelter and a SWF regional shelter) was 6,364 or about half of local emergency managers’ best estimate of demand.”

However, when an event threatens, local emergency management agencies and the Department of Health are typically flooded with additional requests for special needs

<sup>6</sup> 2005 Special Needs Shelter Report, June 2005, DEM and DOH

shelter and transportation. This puts an additional burden on emergency management and responders to follow up with these clients to determine the most appropriate level of care and shelter option. Complicating the situation is the availability of appropriate space in assisted living facilities, skilled nursing facilities and hospitals immediately prior to the event. In prior (Frances and Jeanne) evacuations, the Governor issued an executive order waiving occupancy limits in those facilities in order to provide for continuity of care for those residents who require a higher level of care. This is a critically important element in special needs planning.

What was not reflected in the 2005 report or the table below was the impact of special needs population in the general shelter population. Depending on the demographics in the community, a significant portion of the general shelter population may have or develop (as the event proceeds and stress levels increase) serious health issues.

It is estimated that in the 2004 and 2005 shelter operations from 30-60% of the general shelter population either arrived at the shelter with conditions which warranted a higher level of health care or developed health issues which warranted care associated with a Special Needs Shelter or higher levels of care. There were reports of school principals administering oxygen, monitoring health issues and even changing adult diapers. For the most part, many of these citizens had driven themselves to the shelter and found their health deteriorate given the stress of the event and shelter environment. This situation is not unique to the 2004 or 2005 hurricane season. It has been documented in many other historical events. In addition the DOH reported that many caregivers began to experience health issues as the event progressed.

It was noted that while people may be able to care for themselves or their spouse in their home, combine a stressful evacuation, shelter environment (cots or air mattresses, lack of privacy, etc.) and storm conditions and the situation can become traumatic.

These issues may be mitigated through a continued push to pre-register special needs clients through an aggressive outreach program in the community. Coordination with local home health agencies and health care professionals has reduced this impact, but it remains an issue.

As indicated earlier, each county emergency management agency is responsible for maintaining the registry of persons with special needs. The names on those lists are protected; however, the number of registrants is available and reflects a starting point for determining demand within the county. It should be noted that the registry is fluid. It varies day to day (as does the clientele receiving home health care). It also varies by month as many special needs clients are seasonal residents.

Demographics within the community as well as hazard vulnerability, available health care resources, the extent and duration of power outages and presence of extended family support all impact the potential demand for Special Needs Shelter capacity. The table below identifies the current (October 2010) registrants, current primary ARC 4496 compliant special needs shelter capacities at 60 square feet per client and estimate of

demand based on the survey findings balanced with knowledge of the county demographics and evacuee options.

**Table V-7  
Special Needs Shelter Demand Guidance (2010 Base Scenarios)**

County	Number of Registrants (Medical April 2010)	Planning Percentage	Existing Capacity (2009)	EVACUATION SCENARIO (Demand based on percentage of evacuation population in Base Scenarios)				
		(Assumed 25% Respondents indicating need)		A	B	C	D	E
Charlotte	549	.75%	300	673	1164	1332	1351	1352
Collier	945	.55%	2344	879	1429	1766	1805	1812
Glades	0	.18%	60	12	13	14	15	16
Hendry	6	.83%	26	179	189	208	216	225
Lee	1,000	.38%	1,282	1014	1716	2134	2284	2379
Sarasota	2,788	.88%	3,413	955	1359	2308	2846	3076
Region	2,500	-	6,081	3712	5870	7762	8517	8860

Obviously, most counties are transitioning toward the new requirements for Special Needs Shelters including the space requirement of 60 sq. ft. per person and the emergency power supported air-conditioning. As indicated, additional space must be provided for caregivers, family members, pets, medical equipment and supplies. Relocation of special needs clients' long distances is dangerous as well as taxing on local resources; therefore, if there is not sufficient capacity within a county, a regional solution must be sought.

## 8. Public Private Partnerships

It was hoped that legislation in 2006 would bring more support to the local efforts to meet the challenges of addressing special needs in the community. Home health care agencies which provide care to special needs populations throughout the region have been tasked to provide continuity of care during disasters. It is hoped that this requirement will (1) provide earlier registration/ evaluation of special needs populations; (2) provide additional support for Departments of Health staff in the special needs shelters and (3) provide an overall benefit through private-public partnerships to ensure no one is "left behind."

While the courts interpreted the requirement for "continuity of care" to be provided by the home health agencies in disasters as the time contracted prior to the event, i.e., 2-4 hours a week, it was a step forward.

The legislation also recommended the identification of pediatric and other special units, provided funding for retrofit and generators at designated special needs shelters, where required, and brought together a host of state, local and private sector agencies to address the needs of their clients in a disaster situation.

## H. Pets and Evacuees

### 1. Pet Issues are People Issues

- Fifty-eight percent of U.S. households own animals.
- The media often reports the needs of animals, both domestic and wild, affected by disasters. Following Katrina thousands of pets were rescued although many did not survive.
- Some people are more concerned for their animals in disasters than they are for themselves. This may impair their ability to make sensible decisions about their own safety and that of rescue workers. Examples include evacuation failures and re-entry attempts, and unsafe rescue attempts.
- Following Hurricane Katrina some abandoned pets, hungry, disoriented and frightened became dangerous to rescue workers and returning residents. Packs of dogs – once beloved pets – had to be destroyed



In 2006, the Florida Legislature sought to address this serious concern. Chapter 252.3568, F.S. Emergency sheltering of persons with pets.--In accordance with s. 252.35, *the division shall address strategies for the evacuation of persons with pets in the shelter component of the state comprehensive emergency management plan and shall include the requirement for similar strategies in its standards and requirements for local comprehensive emergency management plans. The Department of Agriculture and Consumer Services shall assist the Division in determining strategies regarding this activity.*

Therefore, the Division of Emergency Management has put forward the following policies:

### 2. Implementation Strategies

- Step One: Establish Policy Guidelines
- Step Two: Develop Standard Operating Guides, Procedures, and Best Practices
- Step Three: Training & Implementation



### 3. Policy Guidance to Residents

- Residents must include pets in family disaster plans.
- Take your pets with you when ordered to evacuate.
  - The best plan is to evacuate with your pets to friends and/or family.
  - Identify and promote pet friendly policies of hotels and motels during emergencies.
  - Shelters are life boats for both you and/or your pets.
- Evacuation support should include people with pets
  - Evacuation Routes
  - Buses
  - Special Needs
- Sheltering: no one with pets should be turned away from a shelter
  - Options
  - Co-located Pet Friendly Shelters
  - Centralized Pet Shelters
  - Boarding facilities and animal shelters, volunteer groups
- Shelters: Service animals should never be turned away or separated from their owner.
- Animal rescue teams should be integrated in ESF 9 - Search and Rescue (SAR)
- Animal SAR teams should be typed and credentialed for the level of service of which they are capable.

### I. Shelter Inventories

At the time of the Southwest Florida Hurricane Evacuation Study, updated in 2005, shelter capacity across the Region was limited. Over the last five years, shelter capacity has nearly doubled due to almost **126,500** shelter spaces as indicated by this Study. Mitigation dollars have been spent to protect exterior windows and doors and install generators. New school construction, meeting the requirements of the Enhanced Hurricane Protection Areas (EHPA) has increased capacity in the region's counties.



It should be noted that the shelters listed are dynamic and their capacities are estimates. Shelter inventories change annually as facilities are added or drop out for retrofit, construction or repairs. They are constantly being evaluated to ensure that the safest facilities are used. The capacities are based on useable space and an estimated 20 sq. ft. per person. However, these estimates are, in fact, estimates and people never fit neatly into a 20 sq. ft. area.

Tables on the following pages, Table V-8A through V-8F, reveal the 2015 reported status of shelter space availability for each county in the Southwest Florida region. This data is being



used in the current transportation evacuation model, but as the data is dynamic, updates can be made in future county-specific transportation modeling runs.

**Color Code on Shelter Inventory Tables:**

Green = May not be available for ALL categories of hurricane events

Orange = Special Needs

In Function Column:

ARC = American Red Cross

HD = County Health Department

SD = County School District

**Table V-8a  
Charlotte County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	Risk Cap	Sp. Needs Cap.	Pet Friendly	Agency Support	Function	Vulnerability			
								SURGE	Evac Zone	Flood	Wild-fire
KINGSWAY ELEMENTARY SCHOOL	23300 QUASAR BLVD	PORT CHARLOTTE	2000		No		SCHOOL	3	C	OUT	N
LIBERTY ELEM SCHOOL	370 ATWATER ST.	PORT CHARLOTTE	1000		No		SCHOOL	3	C	OUT	N
NEW DAY CHRISTIAN CHURCH	20212 PEACHLAND BLVD	PORT CHARLOTTE	300	300	No		CHURCH	3	C	OUT	Y
PORT CHARLOTTE H.S.	18200 COCHRAN BLVD	PORT CHARLOTTE	1000		No		SCHOOL	2	B	OUT	Y
<b>TOTAL CAPACITY</b>			<b>4300</b>	300							

**Table V-8b  
Collier County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP	SP. NEEDS CAP	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild-fire
BARRON COLLIER H.S.	5600 COUGAR DR.	NAPLES	2311		NO		SCHOOL	2	B	OUT	N
BIG CYPRESS ELEMENTARY	3250 GOLDEN GATE BLVD	NAPLES	267		NO		SCHOOL	3	C	OUT	Y
CALUSA PARK ELEMENTARY	4600 SANTA BARBARA BLVD	NAPLES	332		NO		SCHOOL	2	B	OUT	Y
CORKSCREW ES/MS	1165 OIL WELL ROAD (VICTORY LN -CR 858)	NAPLES	335		NO		SCHOOL	4	D	OUT	Y
CYPRESS PALM MS	4255 18TH AV. NE	NAPLES	1675		NO		SCHOOL	4	D	OUT	Y
EDEN PARK ES	3655 WESTCLOX ST.	GOLDEN GATE	487		NO		SCHOOL	NA		OUT	Y
ESTATES ELEMENTARY	5945 EVERGLADES BLVD	GOLDEN GATE	332		NO		SCHOOL	4	D	OUT	Y

	N										
GOLDEN GATE HIGH SCHOOL	2925 MAGNOLIA POND DR. (TITAN LN)	NAPLES	2164		NO		SCHOOL	3	C	OUT	Y
GOLDEN GATE INTERMEDIATE SCHOOL	5055 20TH PL SW	GOLDEN GATE	278		NO		SCHOOL	3	C	OUT	N
GOLDEN GATE MIDDLE SCHOOL	2701 48TH TERR SW	NAPLES	740		NO		SCHOOL	2	B	OUT	Y
GOLDEN TERRACE INTERMEDIATE SCHOOL	2965 44TH TER SW	GOLDEN GATE	263		NO		SCHOOL	3	C	OUT	N
GULF COAST H.S.	7878 IMMOKALEE ROAD	NAPLES	1948		NO		SCHOOL	3	C	OUT	Y
HIGHLANDS ELEM SCHOOL	1101 LAKE TRAFFORD RD	IMMOKALEE	304		NO		SCHOOL	NA		OUT	Y
IMMOKALEE FRIENDSHIP HOUSE	602 W. MAIN ST	IMMOKALEE	127		NO		SHELTER	NA		OUT	Y
IMMOKALEE H.S.	710 IMMOKALEE RD.	IMMOKALEE	1018		NO		SCHOOL	NA		OUT	N
IMMOKALEE MIDDLE SCHOOL	401 N. 9TH ST.	IMMOKALEE	581		NO		SCHOOL	NA		OUT	Y
IMMOKALEE TECH CENTER	508 N 9TH ST, IMMOKALEE	IMMOKALEE	265		NO		SCHOOL	NA		OUT	Y
LAKE TRAFFORD ELEM SCHOOL	3500 LAKE TRAFFORD RD.	IMMOKALEE	270		NO		SCHOOL	NA		OUT	Y
LAUREL OAKS ELEM SCHOOL	7800 IMMOKALEE RD.	IMMOKALEE	288		NO		SCHOOL	3	C	OUT	Y
LELY ELEM	8125 LELY CULTURAL PKWY	NAPLES	297		NO		SCHOOL	2	B	OUT	Y
LELY H.S.	1 LELY HIGH SCHOOL BLVD	EAST NAPLES	2142		NO		SCHOOL	2	B	OUT	Y
MIKE DAVIS ELEM	3215 MAGNOLIA POND DR	NAPLES	250		NO		SCHOOL	2	B	OUT	Y
N.COLLIER REG. PARK	15000 LIVINGSTON RD	NAPLES	760		YES		PARK	3	C	OUT	Y
NAPLES H.S.	1100 22ND AVE., NORTH	NAPLES	1428		NO		SCHOOL	2	B	OUT	N
NORTH NAPLES MIDDLE SCHOOL	16165 LIVINGSTON RD	NAPLES	1031		NO		SCHOOL	2	B	OUT	Y

OAK RIDGE MIDDLE SCHOOL	151 COUNTY RD. 951	GOLDEN GATE	740		NO		SCHOOL	3	C	OUT	Y
PALMETTO RIDGE HIGH SCHOOL	1655 VICTORY LN	NAPLES	741	200	NO		SCHOOL	3	C	OUT	Y
PARKSIDE ELEMENTARY	5322 TEXAS AVE	NAPLES	616		NO		SCHOOL	2	B	IN	Y
PELICAN MARSH ELEM SCHOOL	9480 AIRPORT RD	WEST NAPLES	339		NO		SCHOOL	2	B	OUT	Y
PINECREST ELEMENTARY SCHOOL	213 S 9TH ST	IMMOKALEE	315		NO		SCHOOL	NA		OUT	Y
SABLE PALM ES	4095 18TH AVE,NE	NAPLES	721		NO		SCHOOL	3	C	OUT	Y
ST. MATTHEWS HOUSE	2001 AIRPORT PULLING S	NAPLES	222		NO		SHELTER	2	B	IN	N
TOM GOLISAN FIELD HOUSE	4810 KELLEHER ST.	AVE MARIA	0		NO		SCHOOL	5	E	OUT	N
VETERANS COMM. PARK	1900 IMMOKALEE ROAD	NORTH NAPLES	585		NO		PARK	2	B	IN	Y
VETERANS MEMORIAL ELEMENTARY	15960 VETERANS MEMORIAL PKWY	NAPLES	332		NO		SCHOOL	3	C	OUT	Y
VILLAGE OAKS ELEMENTARY SCHOOL	1501 SR 29	IMMOKALEE	434		NO		SCHOOL	NA		OUT	N
VINEYARDS ELEMENTARY SCHOOL	6225 ARBOR BLVD	GOLDEN GATE	255		NO		SCHOOL	3	C	OUT	Y
<b>TOTAL CAPACITY</b>			<b>25193</b>	<b>200</b>							

**Table V-8c  
Glades County Shelter Inventory**

NAME	ADDRESS	CITY	Risk Cap	Sp. Needs Cap	Pet Friendly	Agency Support	Function	Vulnerability					
								16Ft Surge	Evac Zone	20Ft Surge	Evac Zone	Flood	Wild -fire
AMERICAN LEGION HALL	600 RIVER RD	MOORE HAVEN	70		NO		PRIVATE	4	D	4	D	OUT	N
BUCKHEAD RIDGE COM. CTR. I & II	682 E SR 78	BUCKHEAD RIDGE	100		NO		PRIVATE	2	B	3	C	OUT	Y
BUCKHEAD RIDGE VFW	29012 E SR78	BUCKHEAD RIDGE	60		NO		PRIVATE	NA		NA		IN	Y
DOYLE CONNER BLDG	900 US HIGHWAY 27	MOORE HAVEN	500		NO		GOV	NA		NA		OUT	N
MAPLE GROVE BAPTIST CHURCH	120 E STATE ROAD 78 W	LAKEPORT	343		NO		CHURCH	5	E	4	D	IN	N
MOORE HAVEN ELEM SCHOOL	800 AVENUE K	MOORE HAVEN	160		NO		SCHOOL	NA		NA		OUT	Y
MUSE COMMUNITY CENTER	3897 LOBLOLLY RD	MUSE	46		NO		PRIVATE	NA		NA		OUT	Y
WEST GLADES ELEMENTARY	2500 SOUTH CR 731 SW	LABELLE	594	60	NO		SCHOOL	NA		NA		OUT	N
<b>TOTAL CAPACITY</b>			<b>1873</b>	<b>60</b>									

**Table V-8d  
Hendry County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	Risk Cap	Sp. Needs Cap	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge 16Ft	Surge 20Ft	Flood	Wild-fire
CLEWISTON CENTRAL ELEM SCHOOL	1000 S. DEAN DUFF AVE.	CLEWISTON	686		NO		SCHOOL	OUT	OUT	OUT	Y
CLEWISTON EASTSIDE ELEM SCHOOL	201 W. ARROYO AVE.	CLEWISTON	156		NO		SCHOOL	OUT	OUT	OUT	N
CLEWISTON WESTSIDE ELEM SCHOOL	205 W. ARROYO AVE.	CLEWISTON	338		NO		SCHOOL	OUT	OUT	OUT	N
CLEWISTON H.S.	1501 SOUTH FRANCISCO	CLEWISTON	546		NO		SCHOOL	OUT	OUT	IN	N
CLEWISTON MIDDLE SCHOOL	601 WEST OSCEOLA	CLEWISTON	472		NO		SCHOOL	OUT	OUT	OUT	N
LABELLE COUNTRY OAKS ELEM SCHOOL	2025 NW EUCALYPTUS BLVD.	LABELLE	191		NO		SCHOOL	OUT	OUT	OUT	N
LABELLE HS	4050 EAST COWBOY WAY	LABELLE	777		NO		SCHOOL	OUT	OUT	IN	N
LABELLE MS	8000 EAST COWBOY WAY	LABELLE	366		NO		SCHOOL	OUT	OUT	OUT	N
LABELLE ES	150 WEST COWBOY WAY	LABELLE	101		NO		SCHOOL	OUT	OUT	OUT	N
UPTHEGROVE ES	280 NORTH MAIN STREET	LABELLE	368		NO		SCHOOL	4	4	OUT	Y
WEST GLADES ELEMENTARY	2500 SOUTH CR 731 SW	LABELLE	594	60	NO		SCHOOL	NA		NA	
<b>TOTAL CAPACITY</b>			<b>4595</b>	<b>60</b>							

**Table V-8e**  
**Lee County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	Risk Cap.	Sp. Needs Cap.	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild-fire
ALICO ARENA (FLORIDA GULF COAST	10501 FGCU BLVD S.	FORT MYERS	1685		NO		SCHOOL	4	D	OUT	N
ALVA ELEMENTARY SCHOOL	21290 PARK STREET	ALVA	250		NO		SCHOOL	4	D	OUT	N
BONITA SPRINGS YMCA	27200 KENT RD	BONITA SPRINGS	400		NO		SCHOOL	2	B	IN	Y
COLONIAL ELEM SCHOOL	3800 SCHOOLHOUSE RD. EAST	FT MYERS	1400		NO		SCHOOL	3	C	IN	N
DIPLOMAT ELEM SCHOOL	1115 NE 16TH TER	CAPE CORAL	2100		NO		SCHOOL	2	B	OUT	Y
DIPLOMAT MIDDLE SCHOOL	1039 NE 16TH TER	CAPE CORAL	500		NO		SCHOOL	2	B	OUT	N
EAST LEE COUNTY HS	715 THOMAS SHERWIN	LEHIGH ACRES	3267	3267	YES		SCHOOL	5	E	OUT	N
ESTERO COMMUNITY CENTER	CORKSCREW PALM RD	ESTERO	500		NO			3	C	OUT	Y
ESTERO HIGH SCHOOL	21900 RIVER RANCH ROAD	ESTERO	600		NO		SCHOOL	3	C	OUT	Y
GERMAIN ARENA	11000 EVERBLADES PKWY	ESTERO	4300		NO			3	C	IN	N
HARNS MARSH ELEMENTARY SCHOOL	1800 UNICE AVE N	LEHIGH ACRES	2146		NO		SCHOOL	4	D	OUT	Y
HARNS MARSH MIDDLE SCHOOL	1820 UNICE AVE N	LEHIGH ACRES	1360		NO		SCHOOL	4	D	OUT	N
ISLAND COAST HS	GATOR RD	CAPE CORAL	3866		NO		SCHOOL	3	C	OUT	N
JOHN COLIN ELEM SCHOOL	120 PINE ISLAND RD	N FT MYERS	800		NO		SCHOOL	2	B	OUT	N
JAMES STEPHENS INTERNATIONAL ACADEMY	1333 MARSH AV	FORT MYERS	0				SCHOOL	3	C	OUT	N
LEHIGH HIGH SCHOOL	801 GUNNERY ROAD NORTH	LEHIGH ACRES	850		NO		SCHOOL	5	E	OUT	N
LITTLETON ELEMENTARY SCHOOL	700 HUTTO RD	N FT MYERS	1425		NO		SCHOOL	3	C	OUT	Y
MARINER MIDDLE SCHOOL	425 CHIQUITA BLVD	CAPE CORAL	650		NO		SCHOOL	2	B	OUT	N
MIRROR LAKES ELEMENTARY SCHOOL	525 CHARWOOD AVENUE SOUTH	LEHIGH ACRES	2318		NO		SCHOOL	5	E	OUT	N
NORTH FT MYERS ACADEMY FOR THE A	1856 ARTS WAY	N FT MYERS	1753		NO		SCHOOL	3	C	OUT	Y
NORTH FORT MYERS	2000 NORTH RECREATION	N FT MYERS	500		NO		COMM	2	B	IN	N

COMMUNITY CENTER	PARK WAY						CENT				
OAK HAMMOCK MS	5321 TICE ST	FORT MYERS	2365		NO		SCHOOL	3	C	OUT	N
RAY V. PORTORF ES	4600 CHANLLINGER BLVD	FORT MYERS	800	800	NO		SCHOOL	3	C	OUT	N
RIVERDALE HIGH SCHOOL	2600 BUCKINGHAM RD	FORT MYERS	500		NO		SCHOOL	2	B	OUT	N
ROYAL PALM EXCEPTIONAL CENTER	1817 HIGH STREET	FORT MYERS	150		NO		SCHOOL	3	C	OUT	N
SOUTH FT. MYERS HS	14020 PLANTATION ROAD	FORT MYERS	3106		YES		SCHOOL	3	C	IN	N
THREE OAKS ELEM SCHOOL	19600 CYPRESS VIEW DR	SAN CARLOS	1715		NO		SCHOOL	3	C	OUT	N
THREE OAKS MIDDLE SCHOOL	18500 THREE OAKS PARKWAY	SAN CARLOS	300		NO		SCHOOL	3	C	OUT	Y
VARSITY LAKES MS	801 GUNNERY RD	LEHIGH ACRES	2331		NO		SCHOOL	5	E	OUT	N
VETERENS PARK ES	49 HOMESTEAD RD	LEHIGH ACRES	722		NO		SCHOOL	3	C	OUT	Y
<b>TOTAL CAPACITY</b>			<b>42659</b>	<b>4067</b>							

**Table V-8f**  
**Sarasota County Shelter Inventory and Surge Analysis**

Name	Address	City	Risk Cap	Sp. Needs Cap	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild-fire
ASHTON ELEM SCHOOL	5110 ASHTON ROAD	SARASOTA	1588		NO		SCHOOL	NA		OUT	N
ATWATER ELEMENTARY	4701 HUNTSVILLE AVE	NORTH PORT	3500		NO		SCHOOL	3	C	OUT	N
BISHOP NEVINS ACADEMY	4830 FRUITVILLE RD	SARASOTA	1052		NO		SCHOOL	NA		OUT	N
BOOKER HIGH SCHOOL	3201 N ORANGE AVE	SARASOTA	2400		NO		SCHOOL	5	E	OUT	N
BOOKER MIDDLE SCHOOL	2250 MYRTLE STREET	SARASOTA	1417		NO		SCHOOL	NA		OUT	N
BRENTWOOD ELEMENTARY	2500 VINSON AVE	SARASOTA	1125		NO		SCHOOL	NA		OUT	N
BROOKSIDE MIDDLE SCHOOL	3636 S. SHADE AVE.	SARASOTA	2324		YES		SCHOOL	5	E	OUT	N
CRANBERRY ELEMENTARY	2775 SHALIMAR TER	NORTH PORT	1047	1047	NO		SCHOOL	3	C	OUT	N



GLENALLEN ELEM SCHOOL	7050 GLENALLEN BLVD.	NORTH PORT	1002		NO		SCHOOL	3	C	OUT	Y
GULF GATE ELEM SCHOOL	6500 LOCKWOOD RIDGE ROAD	SARASOTA	2933		NO		SCHOOL	4	D	OUT	N
HERON CREEK MS	6501 W. PRICE	NORTH PORT	3548		YES		SCHOOL	3	C	OUT	Y
NORTH PORT HIGH SCHOOL	6400 WEST PRICE BLVD	NORTH PORT	4653		YES		SCHOOL	3	C	OUT	Y
PHILLIPPI SHORES ELEMENTARY	4747 S. TAMIAMI TRAIL	SARASOTA	1835		NO			5	E	OUT	N
PINEVIEW SCHOOL	501 OLD VENICE ROAD	OSPREY	1101		YES		SCHOOL	3	C	OUT	Y
RIVERVIEW HIGH SCHOOL	1 RAM WAY	SARASOTA	2364		YES		SCHOOL	3	C	OUT	N
SARASOTA HIGH SCHOOL	1000 S. TAMIAMI TRAIL	SARASOTA	4658		NO		SCHOOL	3	C	OUT	N
SOUTHSIDE ELEMENTARY	1901 WEBBER	SARASOTA	1346		NO		SCHOOL	5	E	OUT	N
TATUM RDG ELEMENTARY	4100 TATUM RIDGE RD	SARASOTA	1091	1091	NO		SCHOOL	NA		OUT	N
TAYLOR RANCH ELEM SCHOOL	2500 TAYLOR RANCH ROAD	VENICE	1248		NO		SCHOOL	4	D	OUT	Y
TOLEDO BLADE ES	1201 GERANIUM AVENUE	NORTH PORT	1939		NO		SCHOOL	4	D	OUT	N
TUTTLE ELEMENTARY SCHOOL	925 N BRINK AVENUE	SARASOTA	1883		NO		SCHOOL	NA		OUT	N
VENICE COMMUNITY CENTER	326 NOKOMIS AVE SOUTH	VENICE	922		NO		COMM CEN	3	C	OUT	N
WOODLAND MIDDLE SCHOOL	2700 PANACEA BLVD	NORTH PORT	2959		YES		SCHOOL	5	E	OUT	N
<b>TOTAL CAPACITY</b>			<b>47935</b>	<b>2138</b>							

This page intentionally left blank.

## J. Public Shelter Demand

The general response model, post-hurricane behavioral surveys of residents in the Southwest Florida region and past experience was used to determine public shelter demand. The number of evacuees who choose public shelter as their evacuation destination is based on demographic characteristics of the population including income and age, risk area and housing (mobile home vs. site built homes). The planning assumptions regarding anticipated shelter use were presented in the Regional Behavioral Analysis (See Chapter III, Appendices III-A, III-B, III-C, III-D), and were applied to the projected Hurricane Evacuation Population estimates.

There are several different assumptions regarding the evacuation population (See Chapter VI Evacuation Transportation Analysis):

- The **Base Scenarios** – which are used for planning and growth management purposes assume that 100% of the population-at-risk evacuates plus a (smaller) percentage of non-vulnerable population (shadow evacuation).
- The **Operational Scenarios** used in operations use the planning assumptions determined by the behavioral analysis which are assumed to be a more realistic set of assumptions. Although they do not reflect 100% evacuation of vulnerable residents, there is a significant percentage of shadow evacuation especially in the major storm threats.

The results are presented below:

**Table V-9a**  
**Public Shelter Demand for Hurricane Evacuation Base Scenarios 2015**

County	Capacity*	A	B	C	D	E	E
Charlotte	4,300	6,408	11,270	13,041	13,357	13,366	13,366
Collier	25,193	13,457	24,577	31,224	31,826	31,975	31,975
Glades	1,873	1,252	1,339	1,469	1,565	1,613	1,613
Hendry	4,595	2,666	2,842	3,176	3,336	3,489	3,489
Lee	42,659	18,648	27,443	34,358	38,190	40,393	40,393
Sarasota	47,935	12,082	15,640	23,817	30,005	32,797	32,797
Region	126,555	54,513	83,111	107,085	118,279	123,633	123,633

\*Capacity based on Primary Risk ARC4496 Compliant shelters.

**Table V-9b**  
**Public Shelter Demand for Hurricane Evacuation Operational Scenarios 2015**

County	Capacity*	A	B	C	D	E
Charlotte	4,300	0	6,399	7,718	9,555	11,235
Collier	25,193	10,029	10,029	20,341	24,685	26,818
Glades	1,873	716	716	919	1,112	1,260
Hendry	4,595	1,626	1,626	2,098	2,631	2,999
Lee	42,659	12,930	16,330	23,730	29,461	33,219
Sarasota	47,935	0	10,556	10,556	17,603	29,691
Region	126,555	25,301	45,656	65,362	85,047	105,222

\*Capacity based on Primary Risk ARC4496 Compliant shelters.

**Table V-9c**  
**Public Shelter Demand for Hurricane Evacuation Base Scenarios 2020**

County	Capacity*	A	B	C	D	E	E
Charlotte	4,300	6,806	12,032	13,938	14,275	14,275	14,286
Collier	25,193	15,053	28,026	35,492	36,153	36,153	36,317
Glades	1,873	1,321	1,412	1,548	1,652	1,652	1,702
Hendry	4,595	2,753	2,934	3,280	3,445	3,445	3,602
Lee	42,659	21,691	31,916	40,117	44,491	44,491	47,018
Sarasota	47,935	13,096	16,939	25,856	32,554	32,554	35,631
Region	126,555	60,720	93,259	120,231	132,570	132,570	138,556

\*Capacity based on Primary Risk ARC4496 Compliant shelters.

**Table V-9d**  
**Public Shelter Demand for Hurricane Evacuation Operational Scenarios 2020**

County	Capacity*	A	B	C	D	E
Charlotte	4,300	4,619	6,906	8,336	10,277	8,336
Collier	25,193	0	18,026	18,026	23,467	18,026
Glades	1,873	753	753	968	1,173	1,330
Hendry	4,595	0	1,680	2,166	2,716	3,097
Lee	42,659	15,214	19,331	28,079	34,604	28,079
Sarasota	47,935	9,135	9,135	19,229	26,951	19,229
Region	126,555	29,721	55,831	76,804	99,188	78,097

*\*Capacity based on Primary Risk ARC4496 Compliant shelters.*

## K. Dealing with Shelter Shortfalls and Challenges

Strategies have been implemented at the state and local level to address the shelter issues for the past ten years. Some additional funding for shelter retrofit and generators for special needs shelters was allocated in 2006; however, the economic downturn has taxed federal, state and local resources.

- Public information, both before the emergency and during the evacuation, should stress that while evacuation out of the most vulnerable areas is critical, (1) residents should seek alternative types of refuge before and during the emergency if feasible; and (2) that persons on high ground offer their homes as refuge to friends/relatives in hurricane vulnerable areas.
- Impact fees for development within the Coastal High Hazard Area (CHHA) and Hurricane Vulnerability Zone (Level C), Wildfire Urban Interface and the 100-year flood zone should be used to mitigate the impacts of further development in hurricane prone areas.
- Growth management strategies should minimize development which would increase allowable density or put people with special needs (critical facilities) in designated vulnerable areas.
- Both local governments and local school boards, in cooperation with local emergency management, should ensure that new schools are sited, designed and constructed to be disaster-resistant and appropriate for shelter use. In addition, windows in existing

facilities should be protected/retrofitted to mitigate damage and provide more suitable public shelter. Funding to cover additional construction costs to the School Boards to upgrade to EHPA standards should be sought.

- Continue to encourage the State Legislature to fund the necessary retrofits (for both public and private facilities (particularly schools, hospitals and nursing homes) and mandate appropriate design/construction standards.
- Public outreach should stress that persons with pets prepare ahead for their pets and recognize the extremely limited capacity for pets at public shelters. Emergency management and local school boards need to continue to address this issue.
- Public outreach should stress that persons with special needs speak to their physician/health care provider and register with county emergency management if they require additional assistance.
- In a major evacuation and where necessary, the Governor's Office should, through Executive Order, waive capacity limits in assisted living facilities and nursing homes to ensure appropriate continuity of care and level of care is maintained in the region.
- It should be recognized that providing the appropriate level of care and continuity of care will take ongoing cooperation and communications between and among the public and private sector health care providers. Emergency management, the local health departments and health care providers should partner to develop the plans and shelter locations for our residents with special needs.
- Phase shelter openings: The shelter demand estimates may be high depending on the strength and projected track of the threatening hurricane as well as the response of local government and State officials. The American Red Cross chapters, local emergency management agencies and local school boards developed strategies to phase the opening of selected public shelters depending on the evacuation level and projected shelter demand.



Funding was provided by the Florida Legislature with funding from the Federal Emergency Management Agency (FEMA) through the Florida Division of Emergency Management. Local match was provided by Southwest Florida Regional Planning Council and the counties of Charlotte, Collier, Glades, Hendry, Lee and Sarasota.

**Florida Division of Emergency Management**

**Bryan Koon, Director**

**2555 Shumard Oak Boulevard, Tallahassee, Florida 32399**

**Web site: [www.floridadisaster.org](http://www.floridadisaster.org)**



---

Prepared and published by  
Southwest Florida Regional Council, 1926 Victoria Avenue,  
Fort Myers, Florida 33901  
Tel: (239) 338-2550, Fax: (239) 338-2560, Web site: [www.swfrpc.org](http://www.swfrpc.org)