



# Volume 1-4 Northeast Florida Region Technical Data Report

## CHAPTER V

### REGIONAL SHELTER ANALYSIS



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# 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). 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)).

Historically, pre-storm evacuation shelter demand has significantly decreased in Northeast 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 (50 – 65%). Approximately 5% - 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 Northeast Florida Region, there are a total of 32,024 hotel/motel rooms (2010). With three inland counties in the Northeast Florida region, there is still a majority of rooms available in the Evacuation Level A area. However, as the evacuation level increases from Level A to E, there is less than half the amount of available rooms. Regionally, in a Level E evacuation event, approximately 13,066 rooms should be available. (See Table V-1 below)

Currently, some of the Tourist and Visitors Bureaus in major metropolitan areas 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**

Evacuation Level (Category)	Baker Room Availability	Clay Room Availability	Duval Room Availability	Flagler Room Availability	Nassau Room Availability	Putnam Room Availability	St Johns Room Availability	Regional Room Availability
A	147	1,220	16,985	848	513	634	4,195	25,542
B	147	1,220	15,044	658	513	608	2,010	20,200
C	147	380	13,298	658	513	538	2,010	17,544
D	147	380	12,947	272	495	538	1,698	16,477
E	147	380	9,536	272	495	538	1,698	13,066

Source: Florida Department of Business and Professional Regulation, 2010

## C. Providing Public Shelter

Although there are other options for most evacuees, there will always be a demand for public shelter. There may be significant demand for public shelter in the Northeast Florida region during an evacuation event.

Public shelter demand is the result of several factors:

- Evacuees may not have those 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 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 seeking 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 Northeast 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 V8-A to V8-G. 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 (NFIP), 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. Locating facilities outside of the 100-year floodplain is a priority. 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, but 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 officials 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. These 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 threshold planning quantities) are required to submit a Tier II reporting list (emergency and hazardous chemical inventory form) to the State Emergency Response Commission (SERC), 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 Northeast 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 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 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 additional 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 in the planning stages to make for a more useful hurricane evacuation shelter site, such as the addition of window protection.

## 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 with regard 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 is such that it exceeds the capabilities of the Red Cross Shelter but is not severe enough to require hospitalization. Health Department medical staff supports these shelters.

The State of Florida Division of Emergency Management, Department of Health, local emergency management agencies and 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, care givers 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.
- 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 tools

### 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, emailed 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.

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

- 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 can not accept bedbound patients.
  - They require daily assessment of unstable 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, 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 (SpNS) 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

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

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

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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 (SpNS) 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 American's 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.

**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 care-givers. 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 back up 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 back-up 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 in 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 an area separate 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 will be 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 75+ 2000
Baker	11.45%	13.73%	21.58%	69.34%
Clay	11.89%	14.13%	18.80%	57.52%
Duval	11.21%	13.06%	21.30%	56.55%
Flagler	27.85%	30.36%	22.02%	40.68%
Nassau	16.32%	19.62%	19.61%	59.53%
Putnam	19.24%	20.82%	30.27%	60.15%
St Johns	15.97%	18.30%	18.66%	45.76%

**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?

<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.

- 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?

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	<b>6.1</b>

**(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	<b>2.2</b>

**(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	<b>2.0</b>

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

This is 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 in 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	<b>1.4</b>
Baker County							2.0
Clay County							1.6
Duval County							2.8
Flagler County							2.0
Nassau County							1.2
Putnam County							0.4
St. Johns County							1.2

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, assisted living facility (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, 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 Department of Health’s maximum census (summation of all individual counties’ highest single day totals, plus the Orlando super shelter and a South West Florida 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 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 evacuations (Frances and Jeanne), the Governor issued an executive order waiving occupancy limits in those facilities in order to provide for continuity of care for those residents who required a higher level of care. This is a critically important element in special needs planning.



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

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 some 30-60% of the general shelter population either arrived at the shelter with conditions that warranted a higher level of health care or developed health issues that 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 Department of Health 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 (September 2009) registrants, current shelter capacities and estimate of demand. The planning percentage was based on the survey findings. Based on knowledge of the county demographics and local empirical data, 25% of the planning percentage was used to more accurately determine need.

**Table V-7  
Special Needs Shelter Demand Guidance<sup>7</sup>**

County	Number of Registrants (Medical)	Planning Percentage	Assume 25% respondents Indicating need	Existing Capacity (2009)	EVACUATION SCENARIO (Demand based on percentage of evacuation population)				
					A	B	C	D	E
Baker	125	2.0%	0.5%	50	60	64	68	71	75
Clay	539	1.6%	0.4%	350	232	281	360	414	444
Duval	1,567	2.8%	0.7%	1,617	1,781	2,332	3,304	3,654	4,385
Flagler	365	2.0%	0.5%	176	153	228	256	326	354
Nassau	330	1.2%	0.3%	123	131	137	158	176	185
Putnam	198	0.4%	0.01%	144	4	5	5	5	6
St. Johns	345	1.2%	0.3%	500	304	444	466	497	510
Region	3,469			2,960	2,665	3,491	4,617	5,143	5,959

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 care givers, 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 a 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 Department 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

<sup>7</sup> For Planning Purposes Only

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

- 58% 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 that were 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 § 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 Northeast 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 67,000 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-8G, reveal the 2010 reported status of shelter space availability for each county in the Northeast 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

Yellow = Pet Friendly

Orange = Special Needs

In Function Column:

ARC = American Red Cross

HD = County Health Department

SD = County School District

**Table V-8A**  
**Baker County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP @ 20 sq ft	Sp Needs Cap @60 sq ft	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild Fire
BAKER HIGH SCHOOL	1 WILDCAT DRIVE	GLEN ST. MARY	169		NO	SD	SCHOOL	NONE	NONE	OUT	Y
BAKER MIDDLE SCHOOL	211 E JONATHON STREET	MACCLENNY	163		NO	SD	SCHOOL	NONE	NONE	OUT	Y
FRASER MEMORIAL HOSPITAL	159 N 3RD STREET	MACCLENNY	0	50	NO	HD	HOSPITAL	NONE	NONE	OUT	N
J FRANKLYN KELLER INTERMEDIATE SCHOOL	420 S 8TH STREET	MACCLENNY	124		NO	SD	SCHOOL	NONE	NONE	OUT	Y
PHOENIX CENTER WESTSIDE ELEMENTARY SCHOOL	523 W. MINNESOTA AVE	MACCLENNY	207		NO	SD	SCHOOL	NONE	NONE	OUT	Y
NEW MACCLENNY ELEMENTARY	1 PANTHER CIRCLE	GLEN ST. MARY	285		NO	SD	SCHOOL	NONE	NONE	OUT	Y
NEW MACCLENNY ELEMENTARY	1 WILDKITTEN DRIVE	MACCLENNY	1652		NO	SD	SCHOOL	NONE	NONE	OUT	Y
<b>TOTAL</b>			<b>2,600</b>	<b>50</b>							

**Table V-8B Clay County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP @ 20 sq ft	HOST CAP @ 20 sq ft	Sp Needs @ 60 sq ft	Pet Friendly	Agency Support	Function	Vulnerability			
									Surge	Evac Zone	Flood	Wild-fire
CLAY HIGH SCHOOL	2025 HIGHWAY 16 WEST	GREEN COVE SPRINGS	0	932		YES	SD	SCHOOL	NONE	NONE	OUT	Y
CLAY HILL ELEMENTARY SCHOOL	6345 STATE ROAD 218	JACKSONVILLE	263			NO	SD	SCHOOL	NONE	NONE	OUT	Y
GREEN COVE SPRINGS JUNIOR HS	1220 BONADVENTURE AVENUE	GREEN COVE SPRINGS	0	443		NO	SD	SCHOOL	NONE	NONE	OUT	N
KEYSTONE HEIGHTS HIGH SCHOOL	900 SW ORCHID AVENUE	KEYSTONE HEIGHTS	1043			YES	SD	SCHOOL	NONE	NONE	OUT	N
LAKE ASBURY JUNIOR HS	2851 SANDRIDGE RD	GREEN COVE SPRINGS	298			NO	SD	SCHOOL	NONE	NONE	OUT	Y
ARGYLE ELEMENTARY SCHOOL	2625 SPENCER PLANTATION BLVD	ORANGE PARK	225			NO	SD	SCHOOL	NONE	NONE	OUT	Y
M CRAE ELEMENTARY SCHOOL	6770 COUNTY ROAD 315	KEYSTONE HEIGHTS	0	252		NO	SD	SCHOOL	NONE	NONE	OUT	Y
PLANTATION OAKS ELEMENTARY SCHOOL	4150 PLANTATION OAKS BLVD	ORANGE PARK	273			NO	SD	SCHOOL	NONE	NONE	OUT	Y
OAKLEAF HIGH SCHOOL	4035 PLANTATION OAKS BLVD	ORANGE PARK	568			NO	SD	SCHOOL	NONE	NONE	OUT	Y
RIDEOUT ELEMENTARY SCHOOL	3065 APALACHICOLA BLVD	MIDDLEBURG	395			NO	SD	SCHOOL	NONE	NONE	OUT	Y
ST. JOHNS RIVER COM COL (THRASHER BLDG)	283 COLLEGE DRIVE	ORANGE PARK			350	NO	HD	SCHOOL	NONE	NONE	OUT	Y
TYNES ELEMENTARY SCHOOL - BLDG. 1/CAFETORIUM	1550 TYNES BOULEVARD	MIDDLEBURG		213		NO	SD	SCHOOL	NONE	NONE	OUT	Y
OAKLEAF JR HIGH SCHOOL	4085 PLANTATION OAKS BOULEVARD	ORANGE PARK	272			NO	SD	SCHOOL	NONE	NONE	OUT	Y
OAKLEAF VILLAGE ELEMENTARY SCHOOL	410 OAKLEAF VILLAGE PARKWAY	ORANGE PARK	321			NO	SD	SCHOOL	NONE	NONE	OUT	Y
COPPERGATE ELEMENTARY SCHOOL	2250 COUNTY ROAD 209 NORTH	MIDDLEBURG	311			NO	SD	SCHOOL	NONE	NONE	OUT	N
SHADOWLAWN ELEMENTARY SCHOOL	2945 COUNTY ROAD 218	GREEN COVE SPRINGS	321			NO	SD	SCHOOL	NONE	NONE	OUT	N
<b>TOTAL CAPACITY</b>			<b>4,290</b>	<b>1,840</b>	<b>350</b>							

**Table V-8C Duval County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP. @ 20 sq ft	HOST CAP. @ 20 sq ft.	SP Needs Cap @ 60 sq ft.	Pet Friendly	Agency Support	Function	Vulnerability			
									Surge	Evac Zone	Flood	Wild Fire
A. Robinson Elementary School	101 12 <sup>th</sup> Street W	Jacksonville	1853			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Abess Park Elementary	12731 Abess Boulevard	Jacksonville	2613			NO	ARC	SCHOOL	NONE	E	OUT	Y
Arlington Middle School	8141 Lone Star Road	Jacksonville	1756			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Chaffee Trail Elementary	11400 Sam Caruso Way	Jacksonville	800			NO	ARC	SCHOOL	NONE	NONE	OUT	Y
Chets Creek Elementary	13200 Chets Creek Blvd	Jacksonville	2613			NO	ARC	SCHOOL	NONE	NONE	OUT	Y
Chimney Lakes Elementary	9353 Staples Mill Road	Jacksonville	2862			YES	ARC	SCHOOL	NONE	NONE	OUT	Y
Crystal Springs Elementary	1200 Hammond Blvd	Jacksonville	2862			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Don Brewer Elementary	3385 Hartsfield Road	Jacksonville	600			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Enterprise Elementary	8085 Old Middleburg Road	Jacksonville			360	NO	HD	SCHOOL	NONE	NONE	OUT	Y
FCCJ Cecil Center Aviation-2	13450 Lake Fretwell Street	Jacksonville	708			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Greenland Pines Elementary	5050 Greenland Road	Jacksonville	1680			NO	ARC	SCHOOL	NONE	NONE	OUT	Y
J Allen Axon Elementary	4673 Sutton Park Court	Jacksonville	300			NO	ARC	SCHOOL	NONE	E	OUT	Y
Kernan Trail Elementary	2281 Kernan Boulevard S	Jacksonville	600			NO	ARC	SCHOOL	NONE	NONE	OUT	Y
Landmark Middle School	101 Kernan Boulevard N	Jacksonville	2026		169	YES	ARC/HD	SCHOOL	NONE	NONE	OUT	Y
LaVilla Middle School	501 North Davis St	Jacksonville	614			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Mandarin Middle School	5100 Hood Road	Jacksonville	396		114	YES	ARC/HD	SCHOOL	NONE	NONE	OUT	Y
Mandarin Oaks Elementary	10600 Hornets Nest Road	Jacksonville	3509			NO	ARC	SCHOOL	NONE	NONE	OUT	Y
Oceanway Elementary	12555 Gillespie Ave	Jacksonville	600			NO	ARC	SCHOOL	5	NONE	OUT	Y
Oceanway Middle School	143 Oceanway Ave	Jacksonville			117	NO	HD	SCHOOL	NONE	NONE	OUT	Y
Sable Palm Elementary	1201 Kernan Boulevard N	Jacksonville	3509			NO	ARC	SCHOOL	NONE	NONE	OUT	N
Twin Lakes Academy	8000 Point Meadows Drive	Jacksonville	2613		857	NO	ARC/HD	SCHOOL	NONE	NONE	OUT	Y
Woodland Acres Elementary	328 Bowland Street	Jacksonville	300			NO	ARC	SCHOOL	NONE	NONE	OUT	N
<b>TOTAL</b>			<b>32,814</b>		<b>1617</b>							

**Table V-8D  
Flagler County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP @ 20 sq ft	Special Needs @ 60 sq ft	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild Fire
BELLE TERRE ES	5545 BELLE TERRE PARKWAY	PALM COAST	1084		NO	SD	SCHOOL	NONE	NONE	OUT	Y
BUDDY TAYLOR MIDDLE SCHOOL	4520 BELLE TERRE PARKWAY	PALM COAST	2330		NO	SD	SCHOOL	NONE	NONE	OUT	Y
BUNNELL ELEMENTARY SCHOOL	305 NORTH PALMETTO STREET	BUNNELL	1000		NO	SD	SCHOOL	NONE	NONE	OUT	N
INDIAN TRAILS MIDDLE SCHOOL	5055 BELLE TERRE PARKWAY	PALM COAST	1355		NO	SD	SCHOOL	NONE	NONE	OUT	N
L. E. WADSWORTH ELEMENTARY SCHOOL	4550 BELLE TERRE PARKWAY	PALM COAST	128		NO	SD	SCHOOL	NONE	NONE	OUT	Y
MATANZAS HS	3535 OLD KINGS ROAD	PALM COAST	1243		NO	SD	SCHOOL	NONE	D	OUT	N
FLAGLER PALM COAST HIGH SCHOOL	5500 E HIGHWAY 100	PALM COAST	1675		NO	SD	SCHOOL	NONE	NONE	OUT	N
RYMFIRE ELEMENTARY SCHOOL	1425 RYMFIRE DRIVE	PALM COAST		176	NO	HD	SCHOOL	NONE	NONE	OUT	Y
<b>TOTAL</b>			<b>8,815</b>	<b>176</b>							

**Table V-8E  
Nassau County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP @ 20 SQ FT	HOST CAP @ 20 SQ FT	Sp Needs @ 60 SQ FT	Pet Friendly	Agency Support	Vulnerability				
								Function	Surge	Evac Zone	Flood	Wild fire
BRYCEVILLE ELEMENTARY SCHOOL	6504 CHURCH ROAD	BRYCEVILL E	128			NO	SD	SCHOOL	NONE	NONE	OUT	Y
CALLAHAN ELEMENTARY SCHOOL	449618 US HWY 301	CALLAHAN		326		NO	SD	SCHOOL	NONE	NONE	OUT	Y
CALLAHAN INTERMEDIATE SCHOOL	34586 BALL PARK ROAD	CALLAHAN	326			NO	SD	SCHOOL	NONE	NONE	OUT	Y
CALLAHAN MIDDLE SCHOOL	450121 OLD DIXIE HWY	CALLAHAN	621			NO	SD	SCHOOL	NONE	E	OUT	Y
HILLIARD MIDDLE SENIOR HIGH SCHOOL	1 FLASHES AVE	HILLIARD			123	NO	HD	SCHOOL	NONE	NONE	OUT	Y
HILLIARD ELEMENTARY SCHOOL	275568 OHIO STREET	HILLIARD	326			NO	SD	SCHOOL	NONE	NONE	OUT	Y
WEST NASSAU HIGH SCHOOL	1 WARRIOR DRIVE	CALLAHAN	561			NO	SD	SCHOOL	NONE	NONE	OUT	Y
YULEE ELEMENTARY SCHOOL	86063 FELMORE ROAD	YULEE	370			YES	SD	SCHOOL	NONE	NONE	OUT	Y
YULEE MIDDLE SCHOOL	85439 MINER ROAD 86426 GOODBREAD	YULEE	965			NO	SD	SCHOOL	NONE	NONE	OUT	Y
YULEE PRIMARY SCHOOL	DRIVE	YULEE		129		NO	SD	SCHOOL	NONE	NONE	OUT	Y
YULEE HIGH SCHOOL	85375 MINER ROAD	YULEE	1,028			NO	SD	SCHOOL	NONE	NONE	OUT	Y
<b>TOTAL CAPACITY</b>			<b>4,325</b>	<b>455</b>	<b>123</b>							

**Table V-8F  
Putnam County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP @ 20 sq ft	HOST CAP @ 20 sq ft	Sp Needs @ 60 sq ft	Pet Friendly	Agency Support	Function	Vulnerability			
									Surge	Evac Zone	Flood	Wild Fire
BROWNING-PEARCE ELEMENTARY SCHOOL	100 BEAR BOULEVARD	SAN MATEO	400			NO	ARC	SCHOOL	NONE	NONE	OUT	Y
CRESCENT CITY HIGH SCHOOL	2201 S HIGHWAY 17	CRESCENT CITY		1000		NO	SD	SCHOOL	NONE	NONE	OUT	Y
INTERLACHEN ELEMENTARY SCHOOL	251S STATE RD 100	INTERLACHEN		600		NO	ARC	SCHOOL	NONE	NONE	OUT	N
JENKINS MIDDLE SCHOOL	1100 N 19TH STREET	PALATKA		600		NO	SD	SCHOOL	NONE	NONE	OUT	Y
OCHWILLA SCHOOL	299 N SR 21	MELROSE	260			YES	ARC	SCHOOL	NONE	NONE	OUT	Y
MIDDLETON BURNEY ELEMENTARY SCHOOL	1020 HUNTINGTON ROAD	CRESCENT CITY	805			NO	SD	SCHOOL	NONE	NONE	OUT	Y
PALATKA HIGH SCHOOL	302 MELLON ROAD	PALATKA		1000		NO	SD	SCHOOL	NONE	NONE	OUT	Y
QI ROBERTS MS	901 SR100	FLORAHOME	811			NO	ARC	SCHOOL	NONE	NONE	OUT	N
KELLEY SMITH ELEMENTARY SCHOOL	141 KELLY SMITH ROAD	PALATKA			144	NO	HD	SCHOOL	NONE	NONE	OUT	N
<b>TOTAL CAPACITY</b>			<b>2,276</b>	<b>3,200</b>	<b>144</b>							

**Table V-8G St. Johns County Shelter Inventory and Surge Analysis**

NAME	ADDRESS	CITY	RISK CAP @ 20 sq ft	Sp Needs @ 60 sq ft	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild Fire
<b>PRIMARY SHELTERS</b>											
BARTRAM TRAIL HIGH SCHOOL	7399 LONGLEAF PINE PARKWAY	ST. JOHNS	500		NO	SD	SCHOOL	NONE	NONE	OUT	N
CREEKSIDE HIGH SCHOOL	100 KNIGHTS LANE	ST. JOHNS	500		NO	SD	SCHOOL	NONE	NONE	OUT	Y
CUNNINGHAM CREEK ELEMENTARY SCHOOL	1205 ROBERTS ROAD	ST. AUGUSTINE	800		NO	SD	SCHOOL	NONE	NONE	OUT	Y
DURBIN CREEK ELEMENTARY	4100 RACE TRACK ROAD	ST. JOHNS	500		NO	SD	SCHOOL	NONE	NONE	OUT	Y
FRUIT COVE MIDDLE SCHOOL	3180 RACE TRACK ROAD	ST. JOHNS	500		NO	SD	SCHOOL	NONE	NONE	OUT	Y
HASTINGS COMMUNITY CENTER	6195 S. MAIN STREET	HASTINGS		200	NO	HD	COMMUNITY CENTER	NONE	C	500	Y
HICKORY CREEK ELEMENTARY SCHOOL	235 HICKORY CREEK TRAIL	ST. JOHNS	500		NO	SD	SCHOOL	NONE	NONE	OUT	Y
MILL CREEK ELEMENTARY SCHOOL	3750 INTERNATIONAL GOLF PARKWAY	ST. AUGUSTINE	800		NO	SD	SCHOOL	NONE	NONE	OUT	N
OSCEOLA ELEMENTARY SCHOOL	1605 OSCEOLA ELEMENTARY ROAD	ST. AUGUSTINE	800		NO	SD	SCHOOL	NONE	D	OUT	Y
OTIS MASON ELEMENTARY SCHOOL	207 MASON MANATEE WAY	ST. AUGUSTINE	800		NO	SD	SCHOOL	NONE	D	OUT	Y
PACETTI BAY MIDDLE SCHOOL	245 MEADOWLARK LANE	ST. AUGUSTINE		300	NO	HD	SCHOOL	NONE	NONE	OUT	Y
PEDRO MENENDEZ HIGH SCHOOL	600 SR-206 WEST	ST. AUGUSTINE	500		NO	SD	SCHOOL	NONE	D	OUT	Y
SOUTH WOODS ELEMENTARY SCHOOL	4750 STATE ROAD 206 WEST	ELKTON	500		YES	SD	SCHOOL	NONE	NONE	OUT	N
TIMBERLIN CREEK ELEMENTARY SCHOOL	555 PINE TREE LANE	ST. AUGUSTINE	500		YES	SD	SCHOOL	NONE	NONE	OUT	N
<b>TOTAL CAPACITY</b>			<b>7,200</b>	<b>500</b>							

**TABLE V-8G St Johns County Shelter Inventory and Surge Analysis  
Secondary Shelters**

NAME	ADDRESS	CITY	RISK CAP @ 20 sq ft	Sp Needs @ 60 sq ft	Pet Friendly	Agency Support	Function	Vulnerability			
								Surge	Evac Zone	Flood	Wild Fire
GAMBLE ROGERS MIDDLE SCHOOL	6250 US 1 SOUTH	ST. AUGUSTINE	800		NO	SD	SCHOOL	NONE	B	OUT	Y
JULINGTON CREEK ELEMENTARY	2316 RACETRACK ROAD	ST. JOHNS	600		NO	SD	SCHOOL	NONE	NONE	OUT	Y
R.J. MURRAY MIDDLE SCHOOL	150 N. HOLMES BLVD	ST. AUGUSTINE	189		NO	SD	SCHOOL	NONE	D	OUT	Y
SEBASTIAN MIDDLE SCHOOL	2955 LEWIS SPEEDWAY	ST. AUGUSTINE	800		NO	SD	SCHOOL	2	B	100	Y
ST. AUGUSTINE HIGH SCHOOL	3205 VARELLA AVENUE	ST. AUGUSTINE	800		NO	SD	SCHOOL	4	B	OUT	Y
SWITZERLAND POINT MIDDLE SCHOOL	777 GREENBRIAR ROAD	JACKSONVILLE	800		NO	SD	SCHOOL	NONE	NONE	OUT	Y
W. D. HARTLEY ELEMENTARY SCHOOL	260 CACIQUE DRIVE	ST. AUGUSTINE	335		NO	SD	SCHOOL	NONE	B	OUT	N
WEBSTER ELEMENTARY	420 NORTH ORANGE STREET	ST. AUGUSTINE	80		NO	SD	SCHOOL	NONE	D	OUT	Y
<b>TOTAL CAPACITY</b>			<b>5,204</b>								

## J. Public Shelter Demand

The general response model, post-hurricane behavioral surveys of residents in the Northeast 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 assumptions identified in the Behavioral Analysis (see Chapter III), 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** 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 2010**

Level	Baker County	Clay County	Duval County	Flagler County	Nassau County	Putnam County	St. Johns County	Northeast Region
CAPACITY	2,600	4,290	32,814	8,815	4,325	2,276	7,200	62,320
A	2,357	829	22,664	2,738	3,319	5,093	5,929	42,929
B	2,461	5,750	28,299	4,114	3,417	5,267	8,233	57,541
C	2,566	7,302	40,672	4,730	3,768	5,876	8,719	73,633
D	2,670	8,804	45,532	6,207	4,077	6,151	9,590	83,031
E	2,773	9,483	55,263	6,847	4,203	6,701	10,012	95,282

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

Numbers in **Red** represent a shelter deficit.

**Table V-9b**  
**Public Shelter Demand For Hurricane Evacuation**  
**Operational Scenarios 2010**

Level	Baker County	Clay County	Duval County	Flagler County	Nassau County	Putnam County	St. Johns County	Northeast Region
CAPACITY	2,600	4,290	32,814	8,815	4,325	2,276	7,200	62,320
A	1,456	3,306	18,189	2,085	2,183	3,075	3,981	34,275
B	1,672	4,294	23,112	2,847	2,451	3,424	5,302	43,102
C	2,002	5,911	31,617	3,748	3,056	4,797	6,606	57,737
C (2)	2,002	5,911	31,617	3,748	3,056	4,797	6,606	57,737
D	2,220	7,870	40,445	5,102	3,484	5,448	8,342	72,911
E	2,549	8,767	49,249	6,299	3,857	6,268	9,420	86,409

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

Numbers in Red represent a shelter deficit.

**Table V-10a**  
**Public Shelter Demand For Hurricane Evacuation**  
**Base Scenarios 2015**

Level	Baker County	Clay County	Duval County	Flagler County	Nassau County	Putnam County	St. Johns County	Northeast Region
CAPACITY	2,600	4,290	32,814	8,815	4,325	2,276	7,200	62,320
A	2,368	5,459	24,857	3,275	3,517	5,158	6,531	51,165
B	2,461	6,505	31,250	4,999	3,622	5,343	9,207	63,387
C	2,566	8,266	45,332	5,768	4,013	5,987	9,774	81,706
D	2,670	9,970	50,881	7,611	4,355	6,279	10,791	92,557
E	2,773	10,739	61,818	8,410	4,492	6,862	11,281	106,375

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

Numbers in Red represent a shelter deficit.

**Table V-10b**  
**Public Shelter Demand For Hurricane Evacuation**  
**Operation Scenarios 2015**

Level	Baker County	Clay County	Duval County	Flagler County	Nassau County	Putnam County	St. Johns County	Northeast Region
CAPACITY	2,600	4,290	32,814	8,815	4,325	2,276	7,200	62,320
A	1,469	3,743	20,147	2,518	2,327	3,121	4,403	37,728
B	1,698	4,866	25,680	3,458	2,612	3,480	5,911	47,705
C	2,041	6,690	35,193	4,564	3,256	4,890	7,378	64,012
D	2,268	8,915	45,186	6,246	3,719	5,565	9,368	81,267
E	2,612	9,931	55,108	7,739	4,124	6,423	10,615	96,552

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

Numbers in Red represent a shelter deficit.

## 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, 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 an on-going 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 upon 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.

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