

Volume 1-2 Technical Data Report Apalachee Region

Chapter IV Regional Vulnerability and Population Analysis

Prepared by

**APALACHEE REGIONAL
PLANNING COUNCIL**



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Table of Contents

A. Introduction	IV-1
B. Risk and Vulnerability Assessment	IV-1
C. Population Estimates and Projections	IV-2
1. Small Area Data	IV-2
2. Traffic Evacuation Zones.....	IV-2
D. Hurricane Vulnerability	IV-3
1. Hurricane Evacuation Levels	IV-3
2. Delineation of Hurricane Evacuation Zones	IV-4
3. Hurricane Wind Vulnerability of Manufactured Housing	IV-5
4. Wind Vulnerability of Site Built Residential and Commercial Structures	IV-7
5. Population at Risk	IV-8
6. Evacuation Population	IV-9
7. Property at Risk	IV-16
E. Flood Evacuation Levels.....	IV-17
1. Delineation of Flood Evacuation Zones	IV-17
2. Population at Risk	IV-17
3. Critical Facilities	IV-18
F. Hazardous Materials	IV-18
1. Delineation of Hazardous Materials Vulnerability Zones	IV-18
2. Population at Risk	IV-19
3. Critical Facilities	IV-19
G. Wildfire Evacuation Levels	IV-19
1. Delineation of Wildland-Urban Interface	IV-19
2. Population at Risk	IV-19
3. Critical Facilities	IV-19
H. Critical Facilities	IV-20
1. Hospitals and Skilled Nursing Facilities	IV-22
2. Assisted Living Facilities, Residential Treatment Facilities.....	IV-24
3. End Stage Renal Dialysis Center	IV-24
4. Home Health Care	IV-25
5. Critical Infrastructure.....	IV-25
6. Response and Recovery Facilities	IV-25
7. Other Critical Facilities	IV-25

List of Tables

<u>Table</u>	<u>Title</u>	<u>Page</u>
Table IV-1	Potential Storm Tide Height(s) by County	IV-4
Table IV-2	Mobile Home/ RV Parks in the Apalachee Region (2010)	IV-7
Table IV-3	Population-at-Risk from Hurricanes by Evacuation Level, 2010	IV-9
Table IV-4	Hurricane Evacuation Population, Base Planning Scenario 2010	IV-11
Table IV-5	Hurricane Evacuation Population, Operational Scenario, 2010	IV-12
Table IV-6	Population-at-Risk from Hurricanes by Evacuation Level, 2015	IV-13
Table IV-7	Hurricane Evacuation Population, Base Planning Scenario, 2015	IV-14
Table IV-8	Hurricane Evacuation Population, Operational Scenario, 2015	IV-15
Table IV-9	The 30 Costliest Tropical Cyclones to Strike the U.S. Mainland	IV-16
Table IV-10	Population-at-Risk from Flooding, 2010 - 2015	IV-18
Table IV-11	Population-at-Risk from Wildfire, 2010 – 2015	IV-20
Table IV-12	Critical Facility Types and Codes	IV-21
Table IV-13	Health Care Facilities in Apalachee	IV-23

List of Figures

<u>Figure</u>	<u>Title</u>	<u>Page</u>
Figure IV-1	Traffic Evacuation Zones (TEZs) in the Apalachee Region	IV-27
Figure IV-2	Hurricane Evacuation Zones in the Apalachee Bay Region	IV-29
Figure IV-3	Apalachee Region 100-Year Flood Plain	IV-30
Figure IV-4	Wildland-Urban Interface Evacuation Areas in the Apalachee Region	IV-31

Appendices

Appendix IV-A	Calhoun County Critical Facilities and Vulnerability Analysis
Appendix IV-B	Franklin County Critical Facilities and Vulnerability Analysis
Appendix IV-C	Gadsden County Critical Facilities and Vulnerability Analysis
Appendix IV-D	Gulf County Critical Facilities and Vulnerability Analysis
Appendix IV-E	Jackson County Critical Facilities and Vulnerability Analysis
Appendix IV-F	Jefferson County Critical Facilities and Vulnerability Analysis
Appendix IV-G	Leon County Critical Facilities and Vulnerability Analysis
Appendix IV-H	Liberty County Critical Facilities and Vulnerability Analysis
Appendix IV-I	Wakulla County Critical Facilities and Vulnerability Analysis

CHAPTER IV

REGIONAL VULNERABILITY AND POPULATION ANALYSES

A. Introduction

The hazards analysis was presented in Chapter II and it is the first step in effective evacuation planning – going through the process of identifying the hazards that face the community and the level of risk they represent¹. Once the potential hazards and impacts have been identified, a vulnerability analysis can be conducted to provide information on the location and extent of risk and vulnerability. The vulnerability analysis is the susceptibility of people, property, environment and social and economic activity to injury or damage and the degree to which they are at risk².



"Risk is the probability of a hazard occurrence and vulnerability is the susceptibility of people and property to injury or damage. Risk and vulnerability mapping is simply a procedure for locating areas with different degrees of hazard probability and susceptibility."³ Through the hazards analysis, specific hazards were recognized as having the potential to initiate a regional or multi-jurisdictional evacuation. These included tropical storms or hurricanes, flooding, hazardous materials incidents and wildfires. Therefore, the next step is the vulnerability analysis and risk mapping of these specific hazards.

B. Risk And Vulnerability Assessment

The vulnerable areas within each county were mapped by risk to determine the potential impact to the population, property, critical facilities and the environment. This was accomplished using the analysis data for each hazard facing the community which was determined to have the potential to initiate a regional evacuation, including hurricanes, flooding, hazardous materials incidents and wildfires.

The SLOSH Model Maximum of Maximums (MOMs) storm surge runs were used to determine the evacuation levels for each category of storm and tropical storm scenarios. The FEMA National Flood Insurance Rate Maps (FIRMs) were used for the flooding vulnerability analysis to present the velocity and 100-year flood zones. The vulnerability to hazardous materials

¹ICMA, *Emergency Management: Principles and Practice for Local Government*, Drabek, Hoetmer, editors, 1991, pg 80.

² Pg. 144.

³ Pg. 143.

incidents relied on the Regional Hazardous Materials Emergency Response Plan (2009) and the County Hazardous Material Facility Hazards Analyses to present a compilation of all vulnerability assessments. The wildfire risk was identified by the Florida Division of Forestry assessment of the urban wildland interface. The risk and vulnerability assessment for each specific hazard will be discussed in further detail.

C. Population Estimates and Projections

1. Small Area Data

The most recent census block group data, the socio-economic data which provides the number of households, population and vehicle projections, was obtained from the Census Bureau for all of the counties in the Apalachee Region. Data was provided for the base year of 2006 with projections obtained from the Bureau of Economic and Business Research (BEBR) for 2010 and 2015.

The block group data provided the number of permanent occupied dwelling units (single family and multi-family) and permanent population and the percentage of vacant and seasonal units. Using this percentage and subtracting the percentage of vacant units, an estimate of the seasonal dwelling units and seasonal population was determined. In addition, in all counties the anticipated hotel/motel visitors were incorporated in the evacuation population.

The number of mobile home and recreational vehicle spaces within each evacuation zone, was derived from an inventory of mobile home and recreational vehicle (RV) parks from the Florida Department of Health enhanced with the property appraiser parcel data and Census data. This listing was geo-coded using the GIS and aerial photography.

For purposes of this study, seasonal factors as determined by the 2000 Census by housing type augmented with the American Community Survey data of 2008 (for Leon County only), were applied to determine the number of residents and visitors at different times during the hurricane season.

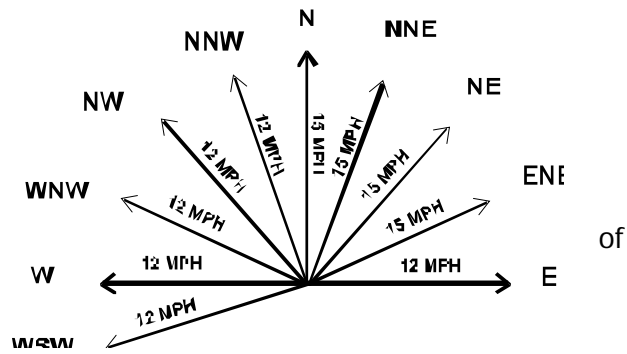
2. Traffic Evacuation Zones

The Small Area Data provide the first level of vulnerability and population analysis. In order to facilitate the evacuation transportation analysis, it was necessary to aggregate the small area data into larger zones. The Apalachee Regional Evacuation Transportation Model incorporates the five counties impacted by storm surge within the Apalachee Region as well as adjacent counties which serve as external destination assignments. Created for the purposes of the Evacuation Transportation Model, Traffic Evacuation Zones (TEZs) form the basic unit of evaluation in the modeling process. The TEZs represent geographic areas and contain the demographic information crucial to modeling evacuation traffic. Each TEZ includes one or more Small Area Data Zone. The TEZs offer the model a balance between specificity in traffic assignment and model flexibility and economy. A regional map of the TEZs is presented in Figure IV-1 on page 26. County TEZ Maps are presented in the Appendices. The TEZs are discussed further in Chapter VI, Evacuation Transportation Analysis.

D. Hurricane Vulnerability

1. Hurricane Evacuation Levels

The SLOSH model is the basis for the "hazard analysis" portion of coastal hurricane evacuation plans. For the update to the Apalachee RES, thousands of hypothetical hurricanes were simulated with various Saffir-Simpson Wind categories, forward speeds, landfall directions and landfall locations. An envelope of high water containing the maximum value a grid cell attains was generated at the end of each model run. These envelopes were combined by the National Hurricane Center (NHC) into various composites which depict possible flooding. One useful composite is the Maximum Envelopes of Water (MEOW) which incorporates all the envelopes for a particular category, speed and landfall direction. Once surge heights were determined for the appropriate grids, the maximum surge heights were plotted by storm track and tropical storm/hurricane category. These plots of maximum surge heights for a given storm category and track are referred to as MEOWs.



In order to determine a scenario which may confront the county in a hurricane threat 24-48 hours before a storm is expected, a further compositing of the MEOWs into Maximums of the Maximums (MOMs) is usually required. The MOM combines all the MEOWs of a particular storm category. The MOMs represent the maximum surge expected to occur at any given location, regardless of the specific storm track/direction of the hurricane. The only variable is the intensity of the hurricane represented by category strength (Category 1-5).

The MOM surge tide heights, which were furnished by the NHC, have two values, mean tide and high tide. Mean tide has 0' tide correction while high tide has a 1' tide correction added to it. All elevations are now referenced to the NAVD88 datum. The range of maximum surge heights (high and low) for each county in the region based upon the model is provided for each category of storm in Table IV-1. It should be noted that these surge heights represent the maximum surge height recorded in the county including inland areas where the surge can be magnified dependent upon storm parameters.

Table IV-1
Potential Storm Tide Height(s) ** by County
(In Feet above NAVD88)

*Storm Strength	Franklin	Gulf	Jefferson	Leon	Wakulla
Category 1	up to 10'	up to 6'	up to 11'	N/A	up to 11'
Category 2	up to 14'	up to 11'	up to 18'	up to 16'	up to 18'
Category 3	up to 21'	up to 13'	up to 24'	up to 24'	up to 24'
Category 4	up to 24'	up to 17'	up to 37'	up to 34'	up to 33'
Category 5	up to 28'	up to 20'	up to 39'	up to 35'	up to 39'

* Based on the category of storm on the Saffir-Simpson Hurricane Wind Scale

** Surge heights represent the maximum values from selected SLOSH MOMs

2. Delineation of Hurricane Evacuation Zones

One of the keys for effective implementation of the study is the delineation of evacuation zones throughout the region. The delineation of evacuation zones is an essential part of any hurricane evacuation plan for two reasons. First, the creation of zones allows for the assignment of population and vehicles for the transportation analysis. Second, the creation of zones allows preparedness and response officials to identify areas predicted to receive a common level of storm surge and areas that should use the same major evacuation routes.

The storm tide limits were determined using the maximum surge from landfalling hurricanes (Categories 1, 2, 3, 4 and 5). County emergency management officials delineated the evacuation zones based on the storm tide limits. However, in order to relay this information to the public in a meaningful way, the emergency management officials used roadways, waterways and familiar landmarks combined with parcel data as the boundaries for the evacuation zones. This was a very painstaking and deliberate process that required knowledge of the area, the land use and population density. Judgments were made about the potential for isolation in areas which may not receive storm surge yet are surrounded by areas which will.

The more detailed storm tide limits coupled with the desire to minimize any potential "over-evacuation" resulted in tighter more detailed evacuation areas in all five counties impacted by storm surge in the region. Conversely, the inability to forecast exact hurricane track, intensity, size and forward speed as well as the limitation of the SLOSH model, encourage many county emergency management officials to simplify the evacuation zone patterns. This more flexible concept allows a more generalized zone scheme which may be easier to convey to the public.

County evacuation zones in the region are presented on Figure IV-2 on page IV-27.

3. Wind Vulnerability of Manufactured Housing

Mobile homes and recreational vehicles are extremely vulnerable to hurricane force winds and severe weather. Statistics document that mobile homes and RVs receive a disproportionate share of the damage from severe weather, and residents are far more likely to be injured or killed in these structures compared to site built homes.⁴



Because of this vulnerability, hurricane evacuation plans in Florida have called for the evacuation of all areas subject to potential storm surge (coastal flooding) and the complete evacuation of all mobile home/RV residents no matter where they are located within the county.

In the 1930s the beauty of America and the draw of the open road attracted campers and their families to "travel trailers". Later, the product and its name evolved into "trailers," and still later "mobile homes"⁵. In 1976 the Department of Housing and Urban Development (HUD) established construction and safety standards for mobile homes, which for many people were now being used as permanent residences. In 1999 HUD added new anchor, strapping, and tiedown regulations to make manufactured homes safer⁶.

In the 2004 hurricane season it seemed new manufactured homes held up relatively well, even when compared to site-built homes. Since 1999, manufactured homes have been built and installed to tougher standards but not equivalent to the most recent codes for site-built structures. As required by HUD all manufactured homes sold in Florida's coastal counties since 1994 are engineered to withstand sustained winds of 110 mph and three second gusts of 130 to 150 mph. (<http://www.builtstronger.com/history.html>)

This is good news for state and local mitigation efforts and public safety and it is evidence that we are moving in the right direction; however, it does not alleviate the concern regarding evacuation. While the manufactured home industry may have a case regarding the benefit of stricter standards, they need to present it to the Florida Building Code officials. Manufactured homes are not currently evaluated against the Florida Building Code; so no matter how strong the industry says they are built, they are not evaluated using the same construction standards as site-built homes. While it is clear that those homes built and installed after 1999 are more hurricane resistant, they must be measured

⁴ In February 1998, a tornado destroyed many site-built homes, mobile homes and RVs in the Kissimmee/Orlando central Florida area. Forty-two people were killed: 34 resided in mobile homes, 7 in RVs and 1 was in an automobile, no one living in a site-built home died.

⁵ *Mobile home* is actually a term that was used for manufactured homes produced prior to June 15, 1976, when HUD began to administer the federal code which governs the construction of all manufactured homes. Note: modular homes where the walls are constructed off-site but assembled on site and affixed to a permanent foundation are now evaluated and inspected against the Florida Building Code. They are built to the same construction standards as site-built structures and are not subject to evacuation orders for wind only.

⁶ Stronger wall sheathing, headers above windows and multiple studs at windows and doors meet post-1994 requirements and add strength to the structural envelope. The result is a home better able to withstand the buffeting of high wind and the impact of wind-borne missiles than the pre-1994 manufactured housing. <http://www.fmha.org/hurricane.html>

against the same construction standards as site built homes. Otherwise, there is no way to confirm how well they will perform.

There are several additional factors to consider:

- Unless a structure is permanently attached to a foundation, there is no way to assume that the structure will remain “tied down” in hurricane force winds. With Florida’s climate, salt air and sandy soils, tie-down systems are not be expected to perform optimally without constant vigilance.
- Currently, most mobile homes in the region were built prior to 1999 and do not meet current standards for wind load or anchoring systems.
- Additions, such as carports, siding and cladding, and attached storage units do not perform well in hurricane conditions even on newer units.
- Newer manufactured homes are at risk from flying debris from older units within the same mobile home park.
- It would be difficult, at best, to implement evacuation orders based on the age and maintenance of individual units.

Therefore, no change in evacuation strategy is identified in this report. In addition to residents vulnerable to storm surge, those residents vulnerable to hurricane force winds (74+ mph) must be evacuated in advance of the hurricane. Basically, residents of buildings without traditional structural foundations are more vulnerable to such wind speeds. In the Apalachee Region, this includes residents of substandard housing, mobile homes and visitors in recreational vehicles and travel trailers. Since hurricane force winds can extend inland many miles, all mobile home residents and travel trailer/RV visitors must be evacuated, regardless of their location in the region.

To update the mobile home population a list of mobile home/ RV parks was obtained from the Florida Department of Health. This list was geo-coded using GIS. County maps identifying the locations of mobile home parks are included in the Appendices. This data base provided an accurate up-to-date inventory of mobile home/RV spaces within licensed parks. However, it was necessary to supplement this data with mobile home counts from the property appraiser’s offices and the Census in order to derive an estimated number of occupied residential mobile homes outside of designated parks. The estimated and projected mobile home populations were incorporated in the evacuation population analyses.

**Table IV-2
Mobile Home/RV Parks in the Apalachee Region (2010)**

County	# of MH/RV Parks	# of Mobile Homes Spaces	# of RV Unit Spaces	Sum # of Spaces
Calhoun	19	291	32	323
Franklin	14	123	341	464
Gadsden	42	519	285	804
Gulf	20	168	581	749
Jackson	97	1,032	496	1,528
Jefferson	14	141	238	379
Leon	76	2,718	328	3046
Liberty	4	31	45	76
Wakulla	25	183	271	454
Region	311	5,206	2,617	7,823

Source: Florida Department of Health, 2010

4. Wind Vulnerability of Site-Built Residential and Commercial Structures

The existing regional hurricane evacuation studies focused on the storm surge hazard with detailed evacuation areas based on the potential coastal flooding. Historically, storm surge has caused nine out of ten hurricane-related deaths. An equally important goal is the evacuation of mobile home/RV residents regardless of their location due to their life-threatening vulnerability to hurricane force winds. However, hurricane force winds can cause significant injuries and property loss even in conventional site built structures -- commercial and residential.

The winds of a major hurricane (winds exceeding 120 mph) can have an impact on the safety of all Apalachee residents as demonstrated by past storm events including hurricanes Kate (1985), Jeanne (2004) and Dennis (2005). There is evidence to support the fact that winds are significantly reduced as the hurricane crosses the coastline. However, the reduction of wind fields and wind speeds to safe limits depends a great deal on the individual parameters of the storm (strength, size, forward speed, etc.), the geography of the area, and the type/ construction of the buildings in harm's way.

Much of the wind damage in hurricanes Andrew, Hugo and Wilma was not confined to waterfront properties. Hurricane Andrew literally destroyed many single-family site built homes 10-20 miles inland. Hurricane Hugo caused serious wind damage as far inland as Raleigh, North Carolina. Hurricane Wilma caused significant wind damage as it exited the east coast of Florida.

The new Florida Building Code addresses "fortified criteria" designed to make new construction more hurricane-resistant. Ultimately, this will have a positive impact on future storm losses, in the meantime, retrofitting existing homes is the primary method available to fortify existing residential construction. Code plus improvements, as defined in the "Blueprint for Safety" developed by the Florida Alliance for Safe Homes (FLASH) in coordination with the Home Builders' Association, covers both new construction and retrofit of existing structures.

The major components of this program are:

- Window protection which meets the Dade County protocol as defined in the Florida Building Code
- Roof and truss connections; reinforcement of gable ends
- Wall and roof connections
- Roof covering
- Garage door and entry door protection
- Safe rooms (FEMA standards)

Through the Local Mitigation Strategies and public information campaigns, state and local governments and the Apalachee Regional Planning Council are working to encourage residents and businesses to mitigate potential wind and flood losses at the local level. This is no easy task; however, implementing the LMS is a priority in the Apalachee Region and efforts to bring together the public and the private sectors are underway to address these major issues.

5. Population-at-Risk

In order to quantify the hurricane evacuation times as well as hurricane response and recovery needs, it is essential to know how many persons must be evacuated from the hazards associated with a tropical storm or hurricane -- the population-at-risk. First, it is necessary to enumerate the entire population residing within the areas predicted by the SLOSH model to require total evacuation from storm tide flooding under evacuation levels (Evacuation levels A, B, C and D). The Evacuation Zones were defined by the county emergency management officials based on the expected inundation areas, definable boundaries and logical evacuation routes.

Second, it is also necessary to quantify all mobile homes and RVs throughout the region -- even in areas not vulnerable to storm tide. These structures are particularly vulnerable to property damage and their inhabitants vulnerable to potential injury and loss of life due to hurricane force winds.

While it is clear that we are in a period of more active and intense tropical activity, this also reflects the exponential growth in population and property at risk. A study (Pielke and Landsea, 1999) of coastal development warned "that more and more Americans have put themselves and their property at risk by flocking to vulnerable coastal locations."

There is 400 times the number of people in Florida today as there was at the turn of the century. In the Apalachee region the population has grown modestly in comparison to the rest of the state and the region population is approximately 450,000 in 2010.

The population-at-risk by hurricane evacuation level for the years 2010 and 2015 are presented in Table IV-3 below and Table IV-6 on page 13.

**Table IV-3
Population-at-Risk from Hurricanes by Evacuation Level, 2010**

	Evacuation Zone A	Evacuation Zone B	Evacuation Zone C	Evacuation Zone D
Franklin County				
Site-built Homes	2,579	6,751	N/A	N/A
Mobile/Manuf. Homes	503	2,276	N/A	N/A
TOTAL	3,082	9,027	N/A	N/A
Gulf County				
Site-built Homes	1,455	5,385	801	N/A
Mobile/Manuf. Homes	223	828	426	N/A
TOTAL	1,678	6,213	1,226	N/A
Jefferson County				
Site-built Homes	0	0	21	163
Mobile/Manuf. Homes	0	0	0	0
TOTAL	0	0	21	163
Leon County				
Site-built Homes	0	0	264	2,950
Mobile/Manuf. Homes	0	0	284	3,784
TOTAL	0	0	548	6,734
Wakulla County				
Site-built Homes	5,978	10,655	8,638	N/A
Mobile/Manuf. Homes	1,975	3,140	3,777	N/A
TOTAL	7,952	13,796	12,416	N/A

Note: Vulnerable population determined using SRESP behavioral data and county provided evacuation zones. Vulnerable population numbers are not inclusive, meaning population numbers listed for a higher zone are not included in the lower zone. For example, vulnerable population listed for Evacuation Zone B does not include vulnerable population listed for Evacuation Zone A.

6. Evacuation Population

The population-at-risk is defined as total population living within the evacuation zone. In every evacuation, however, a percentage of persons who live outside of the surge-vulnerable areas and who do not live in mobile homes or substandard housing will evacuate. Whether this is the result of confusion, a desire to be extra cautious or the desire to avoid the impacts of storm aftermath (loss of power and/or utilities), this phenomenon, termed "shadow evacuation" was documented in post Hurricanes Elena, Georges, Charley, Frances and Jeanne surveys as well as in other post-storm surveys conducted in other parts of the country over the last few decades (Hazard Management Group (HMG), 2009).

In addition, there will also be a percentage of persons inside the evacuation areas who will not evacuate and, to a certain degree, a percentage of persons who live in mobile homes who will not evacuate. After the destruction in South Florida following Hurricane Andrew, it was expected that more people would evacuate than ever before. The post 2004 and 2005 season survey seems to contradict this assumption. Regardless, it is expected that there will be difference in the population-at-risk and the actual evacuation population.

In the Behavioral Analysis, planning assumptions were identified to assist in the development of the anticipated evacuation population under different storm scenarios. Evacuation participation rates are influenced by the perceived risk and location of the residents. Evacuation rates and shelter use are also influenced by age and income which, in the Apalachee Region, are significant factors. These assumptions are discussed in more detail in Chapter III - Regional Behavioral Analysis Summary.

Two sets of behavioral assumptions were made to determine the evacuation populations. The first is considered the base scenario, which represents 100% participation of the population-at-risk plus "shadow evacuation". The base scenario is considered the "planning scenario", a more conservative estimate which will be used for growth management planning purposes. The second set of assumptions is termed the operational scenario. The county planning assumptions as presented in Chapter III – Regional Behavioral Analysis, of this Volume and in more detail in Volume 2 – Regional Behavioral Analysis, were used in the calculations for the evacuation population under the operational scenario. Other differences in the two scenarios are presented in Chapter VI - Regional Evacuation Transportation Analysis of this Volume.

Using a combination of demographic data, behavioral assumptions and evacuation zones, the population-at-risk for each county was determined. The evacuating population for each county in the region for the base planning scenario is presented for the years 2010 and 2015 in Tables IV-4 and IV-7, respectively. The evacuating population for each county in the region for the operational scenario is presented for the years 2010 and 2015 in Tables IV-5 and IV-8 respectively.

It should be noted the 2010 RES update modeled the population-at-risk ("perfect response" scenario) for each of the hurricane evacuation levels plus a "shadow evacuation rate." These sets of assumptions will be used to develop the scenario used for growth management planning.

As indicated, a real world response will most likely reflect less than 100% evacuation from surge vulnerable areas, mobile homes and shadow evacuation. However, even a small percentage of a large population has a significant impact on the population estimates and the resulting evacuating population. The difference between the population-at-risk and the evacuating population can be as much as 20-40%. Both evacuating population estimates were incorporated into the model to conduct the transportation analysis and determine evacuation times. (See Chapter VI – Evacuation Transportation Analysis for model assumptions and impacts.)

Table IV-4
Evacuating Population by Base Planning Scenario 2010

	Category 1	Category 2	Category 3	Category 4	Category 5
Calhoun County					
Site-built Homes	563	1,126	2,251	2,814	3,377
Mobile/Manuf. Homes	4,346	4,346	4,346	4,346	4,346
TOTAL	4,909	5,472	6,597	7,160	7,723
Franklin County					
Site-built Homes	4,950	9,341	9,341	9,341	9,341
Mobile/Manuf. Homes	2,778	2,778	2,778	2,778	2,778
Tourists	463	1,052	1,052	1,052	1,052
TOTAL	8,191	13,171	13,171	13,171	13,171
Gadsden County					
Site-built Homes	2,720	4,080	5,440	6,800	8,161
Mobile/Manuf. Homes	8,968	8,968	8,968	8,968	8,968
TOTAL	11,688	13,048	14,408	15,768	17,129
Gulf County					
Site-built Homes	3,552	7,099	7,488	8,321	8,455
Mobile/Manuf. Homes	3,151	3,151	3,151	3,151	3,151
Tourists	87	273	273	273	273
TOTAL	6,790	10,523	10,912	11,745	11,879
Jackson County					
Site-built Homes	1,170	2,340	4,681	5,851	7,021
Mobile/Manuf. Homes	6,554	6,554	6,554	6,554	6,554
TOTAL	7,724	8,894	11,235	12,405	13,575
Jefferson County					
Site-built Homes	307	595	901	1,244	1,621
Mobile/Manuf. Homes	2,300	2,300	2,300	2,300	2,300
TOTAL	2,607	2,895	3,201	3,544	3,921
Leon County					
Site-built Homes	9,000	17,705	35,237	44,986	55,289
Mobile/Manuf. Homes	15,974	15,974	15,974	15,974	15,974
TOTAL	24,974	33,679	51,211	60,960	71,263
Liberty County					
Site-built Homes	130	263	515	645	782
Mobile/Manuf. Homes	1,392	1,392	1,392	1,392	1,392
TOTAL	1,522	1,655	1,907	2,037	2,174
Wakulla County					
Site-built Homes	11,116	18,367	20,548	25,315	25,339
Mobile/Manuf. Homes	9,110	9,110	9,110	9,110	9,110
Tourists	144	440	440	440	440
TOTAL	20,370	27,917	30,098	34,865	34,889

Table IV-5
Evacuating Population by Operational Planning Scenario for 2010

	Category 1	Category 2	Category 3	Category 4	Category 5
Calhoun County					
Site-built Homes	563	1,126	2,251	2,251	2,814
Mobile/Manuf. Homes	2,173	2,390	2,825	2,825	3,260
TOTAL	2,736	3,516	5,076	5,076	6,074
Franklin County					
Site-built Homes	3,874	4,721	6,460	7,459	8,199
Mobile/Manuf. Homes	1,806	1,945	2,109	2,292	2,665
Tourists	463	1,052	1,052	1,052	1,052
TOTAL	6,143	7,718	9,621	10,803	11,916
Gadsden County					
Site-built Homes	2,720	4,080	5,440	5,440	6,800
Mobile/Manuf. Homes	4,484	4,932	6,277	6,277	7,174
TOTAL	7,204	9,012	11,717	11,717	13,974
Gulf County					
Site-built Homes	2,755	3,210	5,850	6,702	7,723
Mobile/Manuf. Homes	1,902	2,133	2,489	2,647	2,804
Tourists	87	273	273	273	273
TOTAL	4,744	5,616	8,612	9,622	10,800
Jackson County					
Site-built Homes	1,170	1,170	2,340	4,681	4,681
Mobile/Manuf. Homes	3,277	3,277	3,605	4,588	4,588
TOTAL	4,447	4,447	5,945	9,269	9,269
Jefferson County					
Site-built Homes	318	1,237	1,237	1,288	1,576
Mobile/Manuf. Homes	1,380	1,955	1,955	1,955	2,185
TOTAL	1,698	3,192	3,192	3,243	3,761
Leon County					
Site-built Homes	8,936	17,577	34,981	44,560	54,114
Mobile/Manuf. Homes	7,987	8,786	11,182	12,793	13,795
TOTAL	16,923	26,363	46,163	57,353	67,909
Liberty County					
Site-built Homes	123	246	491	491	614
Mobile/Manuf. Homes	675	743	946	946	1,081
TOTAL	798	989	1,437	1,437	1,695
Wakulla County					
Site-built Homes	8,430	10,123	15,861	20,534	22,683
Mobile/Manuf. Homes	5,466	5,922	6,377	7,744	8,655
Tourists	144	440	440	440	440
TOTAL	14,040	16,485	22,678	28,718	31,778

Table IV-6
Population-at-Risk from Hurricanes by Evacuation Level, 2015

	Evacuation Zone A	Evacuation Zone B	Evacuation Zone C	Evacuation Zone D
Franklin County				
Site-built Homes	2,644	6,921	N/A	N/A
Mobile/Manuf. Homes	504	2,280	N/A	N/A
TOTAL	3,148	9,201	N/A	N/A
Gulf County				
Site-built Homes	1,576	5,835	867	N/A
Mobile/Manuf. Homes	241	897	462	N/A
TOTAL	1,817	6,732	1,329	N/A
Jefferson County				
Site-built Homes	0	0	21	161
Mobile/Manuf. Homes	0	0	0	0
TOTAL	0	0	21	161
Leon County				
Site-built Homes	0	0	275	3,076
Mobile/Manuf. Homes	0	0	296	3,945
TOTAL	0	0	571	7,020
Wakulla County				
Site-built Homes	6,722	11,984	9,715	N/A
Mobile/Manuf. Homes	2,222	3,532	4,248	N/A
TOTAL	8,944	15,516	13,963	N/A

Note: Vulnerable population determined using SRESP behavioral data and county provided evacuation zones. Population-at-risk numbers are not inclusive, meaning population numbers listed for a higher zone are not included in the lower zone. For example, vulnerable population listed for Evacuation Zone B does not include the population-at-risk listed for Evacuation Zone A.

Table IV-7
Evacuating Population by Base Planning Scenario for 2015

	Category 1	Category 2	Category 3	Category 4	Category 5
Calhoun County					
Site-built Homes	559	1,119	2,238	2,797	3,356
Mobile/Manuf. Homes	4,322	4,322	4,322	4,322	4,322
TOTAL	4,881	5,441	6,560	7,119	7,678
Franklin County					
Site-built Homes	5,078	9,586	9,586	9,586	9,586
Mobile/Manuf. Homes	2,778	2,778	2,778	2,778	2,778
Tourists	463	1,052	1,052	1,052	1,052
TOTAL	8,319	13,416	13,416	13,416	13,416
Gadsden County					
Site-built Homes	2,845	4,268	5,691	7,113	8,536
Mobile/Manuf. Homes	9,393	9,393	9,393	9,393	9,393
TOTAL	12,238	13,661	15,084	16,506	17,929
Gulf County					
Site-built Homes	3,852	7,698	8,120	9,023	9,168
Mobile/Manuf. Homes	3,420	3,420	3,420	3,420	3,420
Tourists	87	273	273	273	273
TOTAL	7,359	11,391	11,813	12,716	12,861
Jackson County					
Site-built Homes	1,221	2,441	4,882	6,103	7,323
Mobile/Manuf. Homes	6,831	6,831	6,831	6,831	6,831
TOTAL	8,052	9,272	11,713	12,934	14,154
Jefferson County					
Site-built Homes	302	586	888	1,226	1,597
Mobile/Manuf. Homes	2,267	2,267	2,267	2,267	2,267
TOTAL	2,569	2,853	3,155	3,493	3,864
Leon County					
Site-built Homes	9,377	18,446	36,711	46,869	57,604
Mobile/Manuf. Homes	16,657	16,657	16,657	16,657	16,657
TOTAL	26,034	35,103	53,368	63,526	74,261
Liberty County					
Site-built Homes	130	263	515	645	782
Mobile/Manuf. Homes	1,392	1,392	1,392	1,392	1,392
TOTAL	1,522	1,655	1,907	2,037	2,174
Wakulla County					
Site-built Homes	12,500	20,656	23,108	28,469	28,496
Mobile/Manuf. Homes	10,253	10,253	10,253	10,253	10,253
TOTAL	22,897	31,349	33,801	39,162	39,189

Table IV-8
Evacuating Population by Operational Planning Scenarios for 2015

	Category 1	Category 2	Category 3	Category 4	Category 5
Calhoun County					
Site-built Homes	559	1,119	2,238	2,238	2,797
Mobile/Manuf. Homes	2,161	2,377	2,810	2,810	3,242
TOTAL	2,720	3,496	5,048	5,048	6,039
Franklin County					
Site-built Homes	3,975	4,844	6,628	7,654	8,413
Mobile/Manuf. Homes	1,806	1,945	2,109	2,292	2,665
Tourists	463	1,052	1,052	1,052	1,052
TOTAL	6,244	7,841	9,789	10,998	12,130
Gadsden County					
Site-built Homes	2,845	4,268	5,691	5,691	7,113
Mobile/Manuf. Homes	4,697	5,166	6,575	6,575	7,515
TOTAL	7,542	9,434	12,266	12,266	14,628
Gulf County					
Site-built Homes	2,988	3,481	6,344	7,268	8,374
Mobile/Manuf. Homes	2,064	2,315	2,702	2,873	3,044
Tourists	87	273	273	273	273
TOTAL	5,139	6,069	9,319	10,414	11,691
Jackson County					
Site-built Homes	1,221	1,221	2,441	4,882	4,882
Mobile/Manuf. Homes	3,416	3,416	3,757	4,782	4,782
TOTAL	4,637	4,637	6,198	9,664	9,664
Jefferson County					
Site-built Homes	313	1,219	1,219	1,270	1,553
Mobile/Manuf. Homes	1,360	1,927	1,927	1,927	2,154
TOTAL	1,673	3,146	3,146	3,197	3,707
Leon County					
Site-built Homes	9,313	18,318	36,455	46,439	56,395
Mobile/Manuf. Homes	8,329	9,161	11,660	13,341	14,386
TOTAL	17,642	27,479	48,115	59,780	70,781
Liberty County					
Site-built Homes	123	246	491	491	614
Mobile/Manuf. Homes	675	743	946	946	1,081
TOTAL	798	989	1,437	1,437	1,695
Wakulla County					
Site-built Homes	9,480	11,384	17,837	23,092	25,508
Mobile/Manuf. Homes	6,152	6,665	7,177	25,454	32,247
Tourists	144	440	440	440	440
TOTAL	15,776	18,489	25,454	32,247	35,689

7. Property at Risk

Seven of the top ten most destructive U.S. hurricanes made landfall in the past five years, including Hurricanes Katrina (2005), Charley (2004), Ivan (2004), Wilma (2005), Frances (2004), Jeanne (2004) and Allison (2001).

Table IV-9
The 30 Costliest Tropical Cyclones to Strike the U.S. Mainland

(Damages are listed in US dollars and are not adjusted for inflation.)				
Rank	Hurricane	Year	Category	Damage
1	Katrina (FL, MS, LA)	2005	4	81,000,000,000
2	Andrew (SE FL, SE LA)	1992	5	26,500,000,000
3	Wilma (FL)	2005	2	20,600,000,000
4	Charley (SW FL)	2004	4	15,000,000,000
5	Ivan (AL/NW FL)	2004	3	14,200,000,000
6	Rita (SW LA, N TX)	2005	3	11,300,000,000
7	Frances (FL)	2004	2	8,900,000,000
8	Hugo (SC)	1989	4	7,000,000,000
9	Jeanne (FL)	2004	3	6,900,000,000
10	Allison (N TX)	2001	TS ^a	5,000,000,000
11	Floyd (Mid-Atlantic & NE U.S.)	1999	2	4,500,000,000
12	Isabel (Mid-Atlantic)	2003	2	3,370,000,000
13	Fran (NC)	1996	3	3,200,000,000
14	Opal (NW FL, AL)	1995	3	3,000,000,000
15	Frederic (AL, MS)	1979	3	2,300,000,000
16	Dennis (NW FL)	2005	3	2,230,000,000
17	Agnes (FL, NE U.S.)	1972	1	2,100,000,000
18	Alicia (N TX)	1983	3	2,000,000,000
19	Bob (NC, NE U.S.)	1991	2	1,500,000,000
20	Juan (LA)	1985	1	1,500,000,000
21	Camille (MS, SE LA, VA)	1969	5	1,420,700,000
22	Betsy (SE FL, SE LA)	1965	3	1,420,500,000
23	Elena (MS, AL, NW FL)	1985	3	1,250,000,000
24	Georges (FL Keys, MS, AL)	1998	2	1,155,000,000
25	Gloria (Eastern US)	1985	3	900,000,000
26	Lili (SC LA)	2002	1	860,000,000
27	Diane (NE U.S.)	1955	1	831,700,000
28	Bonnie (NC, VA)	1998	2	720,000,000
29	Erin (NW FL)	1998	2	700,000,000
30	Allison (N TX)	1989	TS	500,000,000
30	Alberto (NW FL, GA, AL)	1994	TS	500,000,000
30	Ernesto (FL, NC, VA)	2006	TS	500,000,000

(Damages are listed in US dollars and are not adjusted for inflation.)				
Rank	Hurricane	Year	Category	Damage
30	Frances (TX)	1998	TS	500,000,000

ADDENDUM (Rank is independent of other events in group)

19	Georges (USVI, PR)	1998	3	1,800,000,000
19	Iniki (Kaukai, HI)	1992	3	1,800,000,000
19	Marilyn (USVI, PR)	1995	2	1,500,000,000
25	Hugo (USVI, PR)	1989	4	1,000,000,000
30	Hortense (PR)	1996	1	500,000,000

Source: NOAA online web site at www.nhc.noaa.gov

E. Flood Evacuation Levels

1. Delineation of Flood Evacuation Zones

In order to determine the vulnerability of the flood prone areas, the digital Q3 Flood Data⁷ (100-year flood zones) was used. This allows the data to be presented in a consistent format with other hazards. A map of the 100-Year Flood Plain for the Apalachee Region is presented in Figure IV-3 on page 28.

2. Population-at-Risk

The population-at-risk was determined using the small area data to estimate the population within the flood zones within each block group and the BEBR mid-range projections for 2015. Estimates and projections of the population-at-risk for flood for 2010 and 2015 are presented in Table IV-10.

⁷ The digital Q3 Flood Data product is a digital representation of certain features of FEMA's FIRM product, intended for use with desk-top mapping and GIS technology. The digital Q3 Flood Data are created by scanning (producing raster or grid data files) the effective FIRM paper maps and vectorizing (converting to lines and areas) select data features into a countywide format. The digital Q3 Flood Data are designed to serve FEMA's needs for disaster response activities, National Flood Insurance Program activities, risk assessment, and floodplain management. The data are expected to be used for a variety of planning applications including broad-based review for floodplain management, land-use planning, commercial siting analysis, insurance target marketing, natural resource/environmental analyses, and real estate development and targeting.

The digital Q3 Flood Data are designed to provide guidance and a general proximity of the location of Special Flood Hazard Areas. The digital Q3 Flood Data cannot be used to determine absolute delineation of flood risk boundaries, but instead should be seen as portraying zones of uncertainty and possible risks associated with flood inundation. Users must apply considerable care and judgment in the application of this product.

Table IV-10
Population-at-Risk from Flooding, 2010 - 2015

	Site Built Population 2010	Mobile Home Population 2010	Site Built Population 2015	Mobile Home Population 2015
Calhoun County				
100-YEAR FLOODPLAIN	3,890	1,569	3,890	1,569
Franklin County				
100-YEAR FLOODPLAIN	11,275	2,683	11,275	2,848
Gadsden County				
100-YEAR FLOODPLAIN	3,336	1,107	3,494	1,155
Gulf County				
100-YEAR FLOODPLAIN	9,397	3,431	10,178	3,723
Jackson County				
100-YEAR FLOODPLAIN	5,034	1,141	5,245	1,485
Jefferson County*				
100-YEAR FLOODPLAIN				
Leon County				
100-YEAR FLOODPLAIN	23,595	3,610	24,615	3,755
Liberty County				
100-YEAR FLOODPLAIN	1,382	1,008	1,382	1,008
Wakulla County				
100-YEAR FLOODPLAIN	13,804	4,478	15,525	5,036

*Floodplain information for Jefferson County is not available.

3. Critical Facilities

As indicated previously, the Critical Facility Inventory (CFI) includes a Vulnerability Assessment from (1) Hurricanes, (2) the 100-Year Flood Plain and (3) Wildfire. Refer to Appendices for vulnerability of specific county critical facilities.

F. Hazardous Materials

1. Delineation of Hazardous Material Vulnerability Zones (HMOVZ)

In order to determine the vulnerability of the county to potential hazardous material incidents, it is necessary to determine the vulnerable zone (VZ) of each of the facility using or storing extremely hazardous substances (EHSs). A hazards analysis for each of these facilities is updated annually and provides worst-case estimates of populations at risk from a hazardous materials release. The Local Emergency Planning Committee (LEPC) and the county emergency management agency maintain this data and are able to provide detailed information regarding vulnerability areas which can be determined in real time using the specific chemical, amount of release, wind direction and wind speed. Due to the specificity of each hazardous material release, it was not possible to determine one comprehensive VZ or population exposure for the county.

2. Population-at-Risk

Due to the specificity of each hazardous material release, it was not possible to determine one comprehensive VZ or population exposure for the county.

3. Critical Facilities

As part of the determination of the VZ, critical facilities including hospitals, nursing homes and schools affected are determined at the time of the incident.

G. Wildfire Evacuation Levels

1. Delineation of Wildland-Urban Interface (WUI)

In order to determine the vulnerability of the counties to potential wildfire, the assessment from the Florida Division of Forestry (DOF) risk maps⁸ for wildfire was used to identify areas susceptible to fires. It should be noted that based on the assessment provided by DOF, areas in the Apalachee Region where risk of urban fire is highest are those more densely populated areas. See Figure IV-4 on page 29.

2. Population-at-Risk

The population-at-risk was calculated using the small area data to determine the population within the Wildland Interface. The estimates for the population-at-risk for the Wildland Interface within each county for 2010 and 2015 are presented in Table IV-11.

3. Critical Facilities

The CFI includes a Vulnerability Assessment from (1) Hurricanes, (2) the 100-Year Flood Plain and (3) Wildfire.

⁸ The web-based risk system produces maps for Level of Concern (LOC), Fuels, Wildland Fire Susceptibility Index (WFSI), and the likelihood of the number of fires per 1000 acres per year (FOA).

Table IV-11
Population-at-Risk from Wildfire, 2010 – 2015

Risk	Site Built Residents 2010	Site Built Residents 2015	Mobile Home Population 2010	Mobile Home Population 2015
Calhoun County				
HIGH	635	628	262	261
VERY HIGH	822	817	369	367
Franklin County				
HIGH	665	680	165	165
VERY HIGH	1,162	1,193	402	403
Gadsden County				
HIGH	1,561	1,631	532	552
VERY HIGH	2,309	2,413	837	878
Gulf County				
HIGH	460	500	120	132
VERY HIGH	1,015	1,100	293	293
Jackson County				
HIGH	536	558	176	182
VERY HIGH	1,423	1,495	455	478
Jefferson County				
HIGH	316	312	97	95
VERY HIGH	654	645	254	250
Leon County				
HIGH	24,295	25,319	1,714	1,783
VERY HIGH	23,148	24,134	2,004	2,094
Liberty County				
HIGH	149	149	58	58
VERY HIGH	221	221	104	104
Wakulla County				
HIGH	1,275	1,434	500	562
VERY HIGH	2,931	3,297	1,083	1,218

H. Critical Facilities

The identification of critical and sensitive facilities is an important factor for emergency management planning. The CFI is maintained by state and local emergency management agencies and updated to ensure that preparedness and protective actions can be focused to provide efficient evacuation, sheltering and recovery operations.

Typically critical facilities include transportation facilities, including roadways, bus depots, ports, airports; communications facilities; utilities such as power plants, water treatment plants and water distribution systems; wastewater treatment plants and lift stations; health care facilities such as hospitals, nursing homes, hospice and dialysis facilities; assisted living and residential treatment facilities; schools and day cares; correctional facilities and sheriff/police stations; fire stations; and county and municipal buildings. Volunteer and relief agencies, potential staging areas, recovery centers and points of distribution (PODs) were also included in the critical facilities inventories.

The county inventory was obtained, updated and coded by type of facility. Facilities were coded as follows:

Table IV-12
Critical Facility Types and Codes

TYPE OF CRITICAL FACILITY	CRITICAL CODE
Health Care Facilities	
Assisted Living	
Assisted Living Facilities/ Adult Family Care Homes	11
Adult Family Care Home	52
Long Term Care	
Skilled Nursing Facilities	35
Intermediate Care Facilities	25
Transitional Living Facilities	34
Residential Treatment Facilities	32
Hospitals	
Hospitals	23
VA Hospital	24
Residential Treatment Facilities	32
Ambulatory Surgical Center	14
Crisis Stabilization Unit	17
Hospices	22
Laboratory	
Clinical Laboratory	26
End Stage Renal Disease Facilities	18
Critical Response Facilities	
Law Enforcement	74034
Fire Department	74026
Call Center	11318
EMS	74017
EOCs	74044
PODs	90003
Relief Agencies	74002
Disaster Recovery Center	90006
Logistical Staging Areas	90002
National Guard	67306
Coast Guard	74010
Community Resources	
Designated Shelters	90004
Faith-based Facility	82020
Community Centers	82011
Public Buildings –State	83034
Public Buildings – Local	83026
Public Schools	73002
College	73004
Private School	73007
Correctional Facility	74036
Library	82024

TYPE OF CRITICAL FACILITY	CRITICAL CODE
Stadium	82046
Attraction	82002
Transportation	
Transportation – Seaplane Base	81072
Fuel Facility – along evacuation route	72004
Fuel Facility - FDOT	75018
Transportation – Commercial Port	81044
Transportation – Airport	81006
Transportation – Heliport/Helipad	81026
Transportation – Major Intersection	90001
Communication	
Phone/ Satellite/ Cellular Towers, etc.	11303
Electrical Systems	
Electric Power Plant	75030
Nuclear Power Plant	75034
Electric Substation	75038
Infrastructure	
Solid Waste Facilities	75041
Waste Water Facility	85006
Water Treatment Plants/ Public Water Supply	85004
Hazardous Materials	
Hazardous Materials – 302 facilities	10400
Miscellaneous	
Television	88012

Source: Health Care – AHCA online at www.fdhc.state.fl.us

Schools – FDOE online at www.fdoe.state.fl.us

Shelters and PODs – County Emergency Management Agencies, August 2009

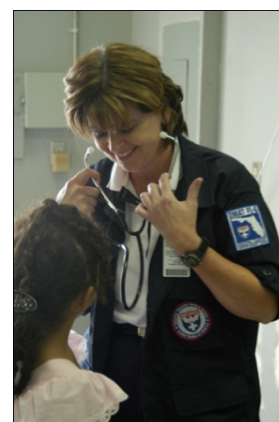
Hazardous Materials – HMIS, August 2009

These facilities were geo-coded and the risk assessment was conducted to determine potential vulnerability to storm surge flooding, coastal and inland flooding and wildfire. The electronic database was provided to the FDEM and county emergency management agencies for official use only.

1. Hospitals and Skilled Nursing Facilities

In the Apalachee Region there are 11 hospitals and many skilled nursing facilities some of which may require complete patient evacuation from storm surge. The effects of a hurricane's hazards on these residents would be greatly compounded by their lack of mobility and need for continuity of care.

Past experience of medical facility evacuations has pointed out that a medical facility which can serve as an emergency shelter for even twice its normal patient capacity is still more capable of providing the necessary medical care to those sheltered patients than would a public shelter such as a school building. This is due to the medical manpower and equipment already in place at the host facility. As a result, low-lying



vulnerable medical facilities are now encouraged by local officials to make individual hurricane contingency plans to evacuate to a similar facility located outside of areas vulnerable to storm surge instead of to a designated public shelter. The surge vulnerability results are essential for this facility-to-facility concept of planning not only to help determine the need for evacuation, but also for the selection of non-vulnerable host shelter facilities for the reception of the evacuated facility's patients.

Chapter 400, Florida Statutes and Chapter 10-D29, Florida Administrative Code, (FAC), mandate and provide guidance in the development of evacuation plans for nursing homes. The procedures to be followed include the designation of a host facility and a written agreement from the host facility, as well as the evacuation transportation providers. Chapter 10-D29 also requires nursing homes to exercise both the internal (fire, etc.) evacuation and external (hurricane, tornado, flooding, etc.) evacuation plans annually. County emergency management agencies must review the disaster plans before a license is granted by the state⁹. In addition, the county emergency management officials provide training and assistance in the development and maintenance of the nursing home plans.

Table IV-13
Health Care Facilities in Apalachee

Type of Facility	Calhoun	Franklin	Gadsden	Gulf	Jackson	Jefferson	Leon	Liberty	Wakulla	Region
Assisted Living										
Assisted Living Facilities/ Adult Family Care Homes	1	2	5	2	1	4	13	3	1	31
Long Term Care										
Skilled Nursing Facilities	2	0	1	1	4	3	6	0	1	18
Intermediate Care Facilities	0	0	0	0	1	0	4	0	0	5
Hospitals										
Hospitals	1	1	1	1	2	0	3	0	0	9
Residential Treatment Facilities	0	0	1	0	0	0	1	0	0	2
Laboratory										
End Stage Renal Disease Facilities	0	0	1	0	1	0	3	0	0	5
Home Care										
Hospices	0	0	0	0	0	0	1	0	0	1

⁹ The state Agency for Health Care Administration (AHCA) administers Florida's \$16 billion Medicaid program, licenses and regulates more than 32,000 health care facilities and 37 health maintenance organizations, and publishes health care data and statistics.

2. Assisted Living Facilities (ALFs), Residential Treatment Facilities

In addition to the medical facilities there are over 25 licensed ALFs in the Apalachee region. ALFs are housing arrangements where adults live together to receive room, meals and assistance with their daily living. ALFs are not nursing homes.

ALFs offer a variety of personal services like supervision of medications, or assistance with daily tasks such as bathing, dressing, etc. Recent administrative changes will allow some ALFs to provide limited nursing services such as injections, prescriptions, dressing changes, etc.



The majority of ALFs were built as private homes and care for four or five residents. In addition to one and two story dwellings, some ALFs are located in high rise buildings, or multi-unit buildings. Three groups of people live in ALFs: the elderly, the physically disabled and the mentally disabled. ALFs may also distinguish residents according to specific health problems. For example, providing they can care for themselves, some homes will accept people with Alzheimer's disease, diabetes and those who require oxygen. While residents of ALFs do not require the constant attention necessary in nursing homes, in a stressful situation such as an emergency evacuation or public shelter stay, residents will need support and continued assistance.

Chapter 10-A5, FAC, requires that ALFs have an evacuation plan (both internal and external) with written agreements with other similar host facilities if evacuation is necessary. FDOH and the Department of Elder Affairs provide guidance in disaster planning for ALFs. In addition many of the county departments of emergency management provide training and assistance in the development and maintenance of the hurricane evacuation plans.

3. End Stage Renal Dialysis Centers

Patients on dialysis face increased risks and challenges in disaster situations. Their treatment requires electrical power and a source of pure water. The Florida Agency for Health Care Administration (AHCA) requires that their providers identify their patients on dialysis and ensure they are dialyzed at their assigned centers within 24 hours of a hurricane warning. They are encouraged to make sure they have an emergency contact number for the dialysis centers, place their patients on their "disaster diets" and provide a list of all dialysis centers in the state as well as patient treatment sheets. Health care providers are instructed not to assume that local hospitals will be able to handle their patients' needs. They are also responsible to provide receiving facilities with the appropriate needs, supplies and sufficient staff. (See *Guidance to Health Care Providers*, AHCA, July 6, 2006)

4. Home Health Care

New legislation in 2006 identified challenges to providing continuity of care especially in a hurricane evacuation. The legislation has assigned responsibility to home health care providers to identify their vulnerable patients, assist them in finding appropriate shelter for the storm depending on their clients' needs and appropriate level of care and to provide sufficient staff and supplies to the receiving facilities.

Special needs shelters are available for those residents on the special needs registries as well as plans for transportation of those residents and their care providers. Home health agencies are now required to work with the county emergency management agencies and health departments and to augment staff at those shelters if required.

5. Critical Infrastructure (Water Systems, Wastewater Systems, Power, Communications and Transportation)

The CFI also includes a listing of critical facilities/infrastructure necessary for response and recovery. County emergency management officials worked with providers including local government, utility companies, phone and cellular companies and transportation entities in the region to identify these facilities.

6. Response and Recovery Facilities

State and county emergency management agencies have pre-identified potential sites for PODs as well as potential Staging Areas and Recovery Sites. These facilities are included in the CFI and are mapped. In addition certain community resources such as community/recreation centers and churches were included. This preliminary information will be evaluated looking at key factors such as hazard vulnerability, neighborhood access and income levels.

7. Other Critical Facilities

The CFI also includes the most current listing of facilities storing EHSs, mobile home and RV parks, as well as both public and private resources.

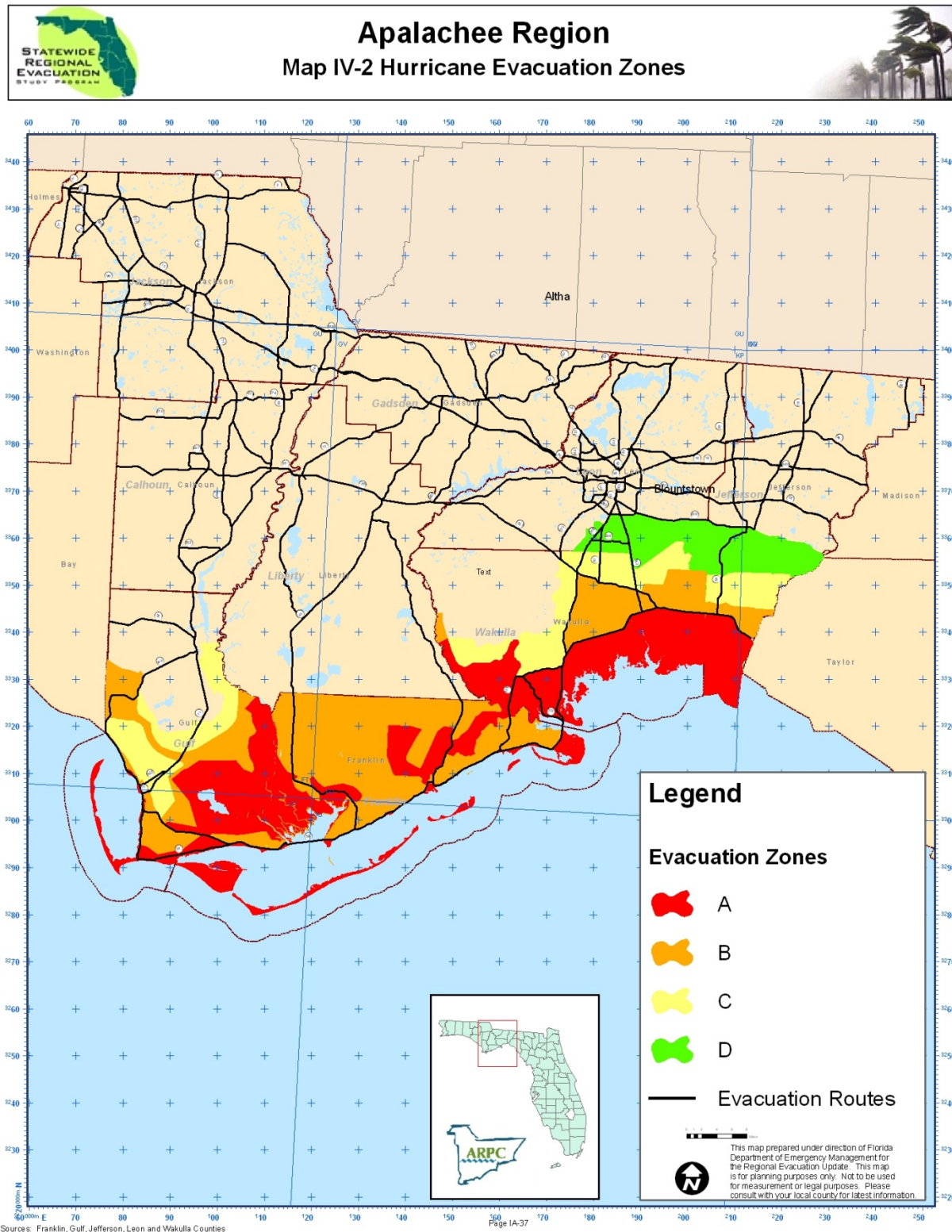
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Figure IV-1
Traffic Evacuation Zones (TEZs) in the Apalachee Region



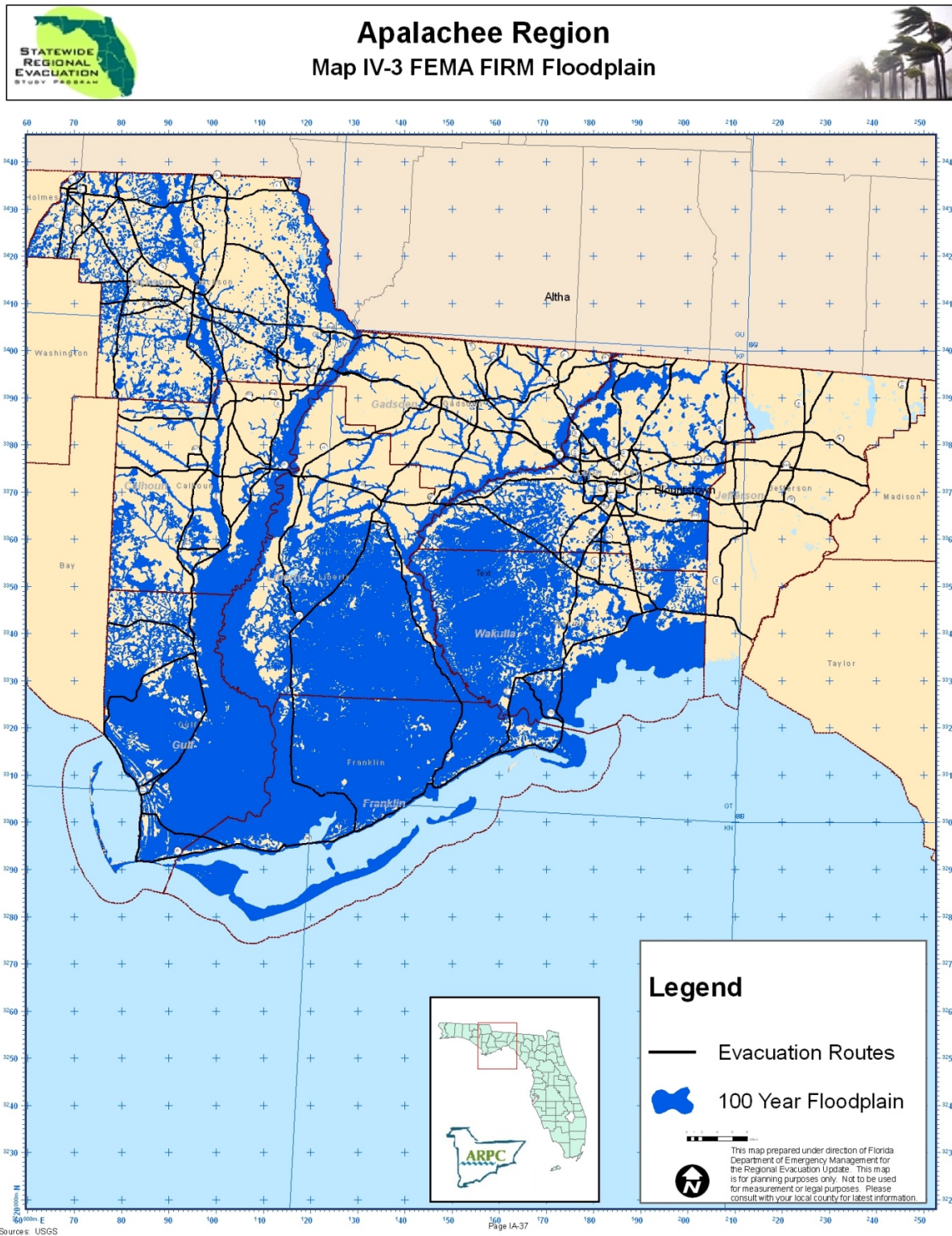
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Figure IV-2
Hurricane Evacuation Zones in the Apalachee Region



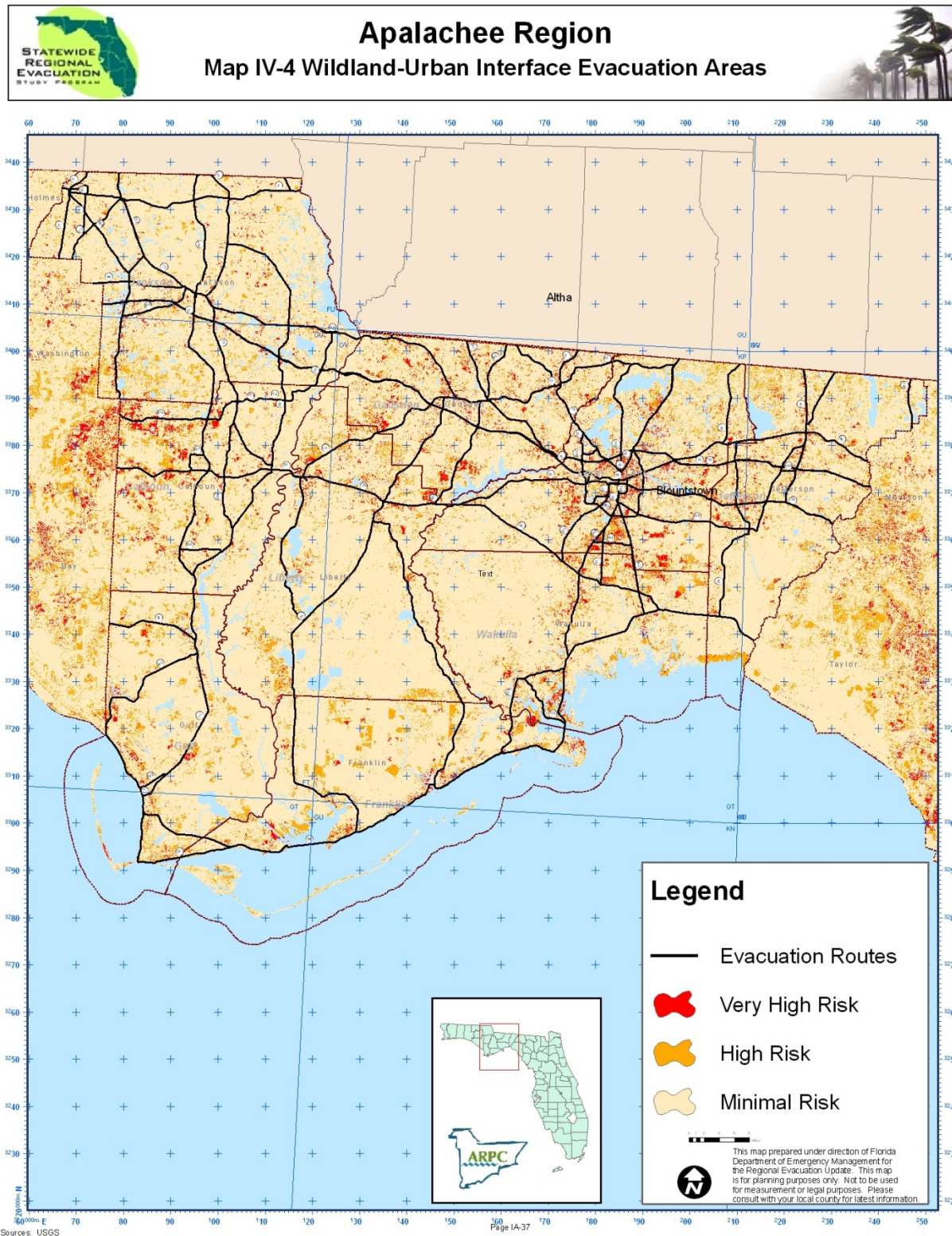
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Figure IV-3
Apalachee Region 100-Year Flood Plain



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Figure IV-4
Wildland-Urban Interface Areas in the Apalachee Region



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