South Florida Regional Planning Council

February 12, 2007

The *2006 South Florida Regional Hurricane Evacuation Traffic Study* is a research document prepared under contract #06-DR-65-13-00-21-007 for the Florida Department of Community Affairs (DCA). This Study was undertaken to enhance and update the South Florida Regional Hurricane Evacuation Model for Broward, Miami-Dade and Monroe Counties, and to provide technical data to DCA and other South Florida partners.

Council staff closely coordinated with regional partners during the preparation of this study. Council staff created a Technical Advisory Team made up of representatives of the offices of emergency management and planning departments of the three counties, as well as representatives of DCA, the Division of Emergency Management and the Florida Department of Transportation.

The updated regional hurricane evacuation model was prepared with a set of six baseline scenarios based on three levels of storm events (Categories 1-2, Category 3 and Categories 4-5) for both low and high tourist occupancy. The baseline data and the behavioral assumptions incorporated into these six scenarios represent the best available data and the official policies of the county offices of emergency management. Each of these six baseline scenarios produced an estimate of the number of evacuating people and vehicles in the three counties in accordance with destination choices inside and outside of the region for a storm requiring the simultaneous evacuation of all three counties. In addition, the traffic modeling carried out in the Study identified critical links in the regional roadway network for each baseline scenario, and a clearance time was calculated for each of those critical links.

At the request of members of the Technical Advisory Team, an additional eight "test" scenarios were prepared using the simplified User Model to analyze the magnitude of the effect of alternative assumptions on the number of evacuating people and vehicles, and resulting clearance times. These test scenarios were produced for demonstration purposes and to showcase the User Model's capabilities.

Council staff completed the *2006 South Florida Regional Hurricane Evacuation Traffic Study* in late September 2006, and submitted the final Technical Support Document, along with a fully updated User Model (spreadsheet) and all other project deliverables, to DCA for review on October 30, 2006. DCA has acknowledged successful completion of the Study contract.

The South Florida Regional Planning Council has not adopted a policy position with regard to any of the results of this research study. The Council's current policies with regard to emergency preparedness and directing development away from areas vulnerable to storm surge can be found in Goals 18 and 19 of the *Strategic Regional Policy Plan for South Florida (SRPP)*, adopted in June 2004.

Please visit the Council's website (www.sfrpc.com/rhem.htm) or contact the members of the project team listed below if you have any questions.

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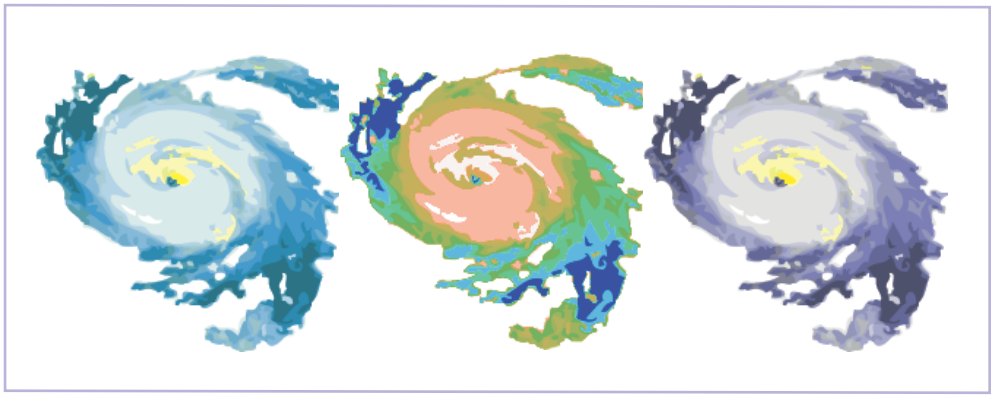

2006 South Florida Regional Hurricane Evacuation Traffic Study
Technical Support Document

Prepared by the South Florida Regional Planning Council
for the
Florida Department of Community Affairs
September 2006

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The South Florida Regional Planning Council would like to thank all of the stakeholder agencies and members of the Technical Advisory Team who provided insight and feedback during the Traffic Study update process. We appreciate the time that you dedicated to making this a successful project. We are deeply indebted to the Florida Department of Transportation - District IV for their technical assistance with the traffic modeling, a critical component of the Traffic Study update. We also wish to thank the personnel from Miami-Dade, Broward and Monroe County emergency management agencies who provided us with knowledge and data about hurricane evacuation logistics along the way: Irene Toner, Jonathan Lord, Frank Reddish, Lori VunKannon, Glen Margolis and Tony Carper. A heartfelt thank you to Bill Leonard and Frank Baumann, who graciously provided us with housing and population data for Broward and Miami Dade-Counties. We also wish to extend a special thank you to the Florida Department of Community Affairs for funding this project and for their guidance and support throughout this effort.

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GLOSSARY

Background traffic is the measure of vehicles using the transportation network for trip purposes other than hurricane evacuation.

Base data refers to the dwelling unit, population, public shelter and behavioral information collected for the 2006 South Florida Regional Hurricane Evacuation Traffic Study in order to represent the current conditions in each county. This data was compiled from the best available secondary data sources. The dwelling unit and population data was collected by census block group and traffic analysis zone.

Census Block Groups are the basic unit of geography for base data collection in Monroe County.

Clearance time, in the 2006 South Florida Regional Hurricane Evacuation Traffic Study, is determined for the counties and the regional roadways. It is established through a critical link analysis. Clearance time is the ratio of the volume of total evacuation traffic on a roadway link to the roadway capacity of that link.

County clearance time measures the amount of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation.

For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative.

County Evacuation Zones are officially designated hurricane evacuation zones defined by county emergency management officials. These zones inform both the traffic and the user model; these boundaries are used to define the county areas which will come under directed evacuation orders and which are most susceptible to storm surge. Ultimately, these zones identify the vulnerable populations most likely to evacuate and who is evacuating under a specific hurricane evacuation scenario.

A **critical link** is a section of a roadway that is considered a limiting factor in a regional hurricane evacuation. A link is designated critical due to its capacity limitations, its designation as a hurricane evacuation route or the high likelihood of it becoming congested as shown by the traffic model. The user model uses a critical link analysis to present clearance times for a regional hurricane evacuation.

The user model carries out a **critical link analysis** to determine final clearance times. It calculates the volume to capacity ratio, in hours, on selected critical links. Each county's critical link with the highest volume to capacity ratio determines the final clearance time for that county. This critical link analysis and the resulting clearance times are the outcomes used to present the modeled dynamics of South Florida regional hurricane evacuations and inform decision-making.

Model Evacuation Zones are the basic unit of geography, by county, on which the user model is constructed. Each county has a specific set of model evacuation zones. Broward County has 42 model evacuation zones, Miami-Dade County has 53 model evacuation zones and Monroe County has 6 model evacuation zones based on its five hurricane evacuation zones. In Miami-Dade and Broward Counties the model evacuation areas are aggregates of Traffic Analysis Zones and similar to those originally created by PBS&J. In Monroe County, these zones coincide with the five County designated evacuation zones.

Roadway capacity is the maximum number of vehicles that a uniform section of lane or roadway can reasonably be expected to carry during a given time period under prevailing roadway, traffic and control conditions. It can be described as the maximum hourly vehicle flow rate over a uniform section of road. Roadway capacity is measured in vehicles per hour per lane.

Traffic Analysis Zones are the basic unit of geography for base data collection in Miami-Dade and Broward Counties.

Traffic loading factors capture the proportion (percentage) of total evacuating vehicles that enter onto and travel on a specific roadway. The percentages of out of region evacuating vehicles that travel on each of the regional roadways on their journey out of region, as determined by the traffic model, are built into the user model.

Traffic volume is the total number of evacuating vehicles traveling on a specific roadway en route to their safe destination.

Trip assignment refers to the route choices evacuating vehicles make as they travel across the regional roadway system to reach their safe destination during each regional hurricane evacuation baseline scenario. The traffic model program assigns vehicles to specific roadways, replicating the way in which people choose specific roadways based on perceived traffic congestion. Trip assignment determines the total traffic volume traveling on a roadway.

Trip distribution is the destinations to which evacuating vehicles will travel during an evacuation.

Trip generation is how many vehicles will be generated under a particular hurricane evacuation scenario.

A **volume-to-capacity ratio** is the number of total evacuating vehicles traveling across a roadway link during a regional hurricane evacuation over that roadway link's roadway capacity. This ratio is measured in hours. Volume to capacity ratios on selected critical roadways enable an analysis of the amount of time it will take evacuating vehicles to traverse those roadways. They indicate which critical links will be the most limiting (in terms of time needed to travel across it) and will set the clearance times for a regional hurricane evacuation. The user model calculates volume to capacity ratios to carry out this type of critical link analysis.

SECTION 1: TRAFFIC STUDY OVERVIEW

Introduction

With its rapid population growth, high rates of land development and its susceptibility to major storm events, the South Florida region demands the most up-to-date tools in hurricane evacuation traffic modeling. Sophisticated and up-to-date hurricane evacuation traffic modeling provides the important information necessary to ensure public safety and inform hurricane evacuation planning and policy. Hurricane evacuation traffic modeling presents data on the potential dynamics and magnitude of an evacuation. It provides data on the number of people who are likely to evacuate, on the number of vehicles that can be expected to travel on the roads, and on evacuee destinations under hurricane conditions.

In early 2006, the Florida Department of Community Affairs (FDCA) approached the South Florida Regional Planning Council (SFRPC) with a proposal to carry out an update of the regional hurricane evacuation traffic study component of the South Florida Regional Hurricane Evacuation Study (HES). This traffic study update is the first step in revising the complete South Florida Regional Hurricane Evacuation Study, which is made up of a SLOSH model, Behavioral Model, Hazards Analysis and Vulnerability Assessment. The HES, in its entirety, will be updated within the next two years.

FDCA and the SFRPC worked jointly to develop a project that was a timely and telling response to two of South Florida's most pressing hurricane evacuation traffic modeling needs: 1) to create and make available a regional user model that fully integrates Monroe County, Miami-Dade County and Broward County, and 2) to enhance the current understanding of and ability to model hurricane evacuation dynamics specific to the South Florida region.

The resulting 2006 South Florida Regional Hurricane Evacuation Traffic Study and its user model, with the capability to analyze existing and future regional hurricane evacuation traffic dynamics by allowing users to test alternative evacuation scenarios, add value to the current hurricane evacuation policy and planning discussions. The Traffic Study analyzes how the evacuation traffic from Monroe, Miami-Dade and Broward Counties, produced by six regional hurricane evacuation scenarios, simultaneously converges on and impacts the regional roadway network. With its broad, three-county perspective, the Study charts the flow of vehicles to destinations inside and outside the region to generate clearance times and identify South Florida roadways prone to traffic congestion. For example, it enables an assessment of how cross-county flows of evacuating vehicles from Broward County to Miami-Dade County or vice versa, translate into congestion on the regional roadways. This Traffic Study and its user model also shed light on a central question in South Florida hurricane evacuation discussions: how Monroe County evacuation traffic interacts with Miami-Dade evacuation traffic, especially in southern Miami-Dade County, as it travels into and/or through Miami-Dade County.

By measuring the cumulative impacts of regional evacuation traffic, the study and its product, the user model, are tools to better understand and anticipate South Florida residents' ability to safely and efficiently evacuate to safe destinations in the event of a regional hurricane evacuation. As a policy tool, the 2006 South Florida Regional Hurricane Evacuation Traffic Study, with the development of its interactive user model, effectively ties land use and transportation planning decisions made at local and county levels to the regional dynamics of hurricane evacuation. The study and the user model account for how current and future housing trends, population trends, evacuation behaviors and land development policies across the region, especially within hurricane evacuation zones, generate hurricane evacuation traffic and affect clearance times. The importance of the user model is that it provides the flexibility to analyze a wide range of hurricane evacuation scenarios.

The Traffic Study and user model are designed to serve as one indicator of how current and future growth in the South Florida region can affect hurricane evacuation. As a policy tool, the Study and the user model are intended to inform and guide policy discussions that will occur in a broader context with state, local, county and regional decision-makers.

Traffic Study Process

The 2006 South Florida Regional Hurricane Evacuation Traffic Study was designed to look at current South Florida regional hurricane evacuation conditions, using traffic modeling, performed by FDOT-District IV, under six baseline hurricane evacuation scenarios. This effort built upon existing hurricane evacuation knowledge about South Florida created by private sector consultants PBS&J and Miller Consulting Inc. Another component of this project was to develop an interactive user model as part of the Traffic Study, built using the Study's base data and traffic model outcomes, which would allow users to test how changes in model inputs and assumptions would result in alternative outcomes. Upon completion of the Traffic Study, this user model and the traffic modeling platform would be made available to other public agencies for use. An unpublished regional model created in 2004 by PBS&J Inc. for the United States Army Corps of Engineers, which linked Monroe, Miami-Dade and Broward Counties, was the starting point for the Traffic Study and the design of the Study's user model.

SFRPC staff and FDCA identified a stakeholder group and Technical Advisory Team (TAT) to advise the Traffic Study process. The stakeholder group provided feedback to help guide the direction of the Traffic Study and identified the desired capabilities of the Traffic Study. The stakeholder group included the affected county land use planning agencies and emergency management offices, municipalities within the Florida Keys, the Florida Departments of Community Affairs and Transportation, the Florida Division of Emergency Management and the Florida Highway Patrol.

Technical Advisory Team (TAT) participants reviewed and validated the Traffic Study and user model development process. By sharing existing hurricane evacuation model knowledge from PBS&J and Miller Consulting, Inc. with these partners, SFRPC staff facilitated an understanding of hurricane evacuation modeling mechanics, building local knowledge about this type of modeling.

In addition, SFRPC staff collaborated with local public agencies to obtain data for the Traffic Study and to encourage the creation of a localized informational framework to inform future Traffic Study updates.

Traffic Study Development: Base Data Collection, Traffic Modeling, User Model Creation and Test Scenario Development

The Traffic Study was structured around three fundamental tasks. The first task was to collect and structure a base dataset using the best available secondary data sources representative of the current conditions in each county. No primary data collection or synthesis occurred for project purposes. This base data included the best available dwelling unit and population information for each county, shelter data and policy-based behavioral assumptions.

This base data served as the informational platform necessary to complete the second model task: 1) calculate and provide data for each baseline scenario to the Florida Department of Transportation (FDOT) - District IV to conduct the necessary traffic modeling, and 2) construct the user model framework. This base data was used to update the PBS&J model in order to create the 2006 user model.

The base data was used to create the modeling conditions for the six baseline hurricane evacuation scenarios identified in **Table 1**. The six baseline scenarios were designed to represent a simultaneous directed evacuation of all three counties shaped by each county's current hurricane evacuation policies. For example, the scenarios were designed to reflect the "shelter in place" philosophy emphasized by both Broward County and Miami-Dade County emergency management officials. These scenarios were also formatted to capture a basic range of storm conditions. For example, Scenario 1 represents Category 1-2 storm conditions, Scenario 2 represents Category 3 storm conditions and Scenario 3 represents Category 4-5 storm conditions. Each scenario is divided into two separate tourist occupancy conditions: low tourist occupancy (A) and high tourist occupancy (B) conditions. This framework for analysis results in a total of six baseline scenarios: 1A, 1B, 2A, 2B, 3A and 3B.

Table 1: Six Baseline Evacuation Scenarios		
Storm Category[1]	**Low Tourist Occupancy**	**High Tourist Occupancy**
Category 1-2	Scenario 1A	Scenario 1B
Category 3	Scenario 2A	Scenario 2B
Category 4-5	Scenario 3A	Scenario 3B

The third model task included finalizing the user model and calibrating it to current hurricane evacuation traffic conditions. The six baseline scenario traffic conditions and outcomes produced through FDOT's traffic modeling were built into the user model. The third model task also included running a set of test scenarios on the user model, based on input from the Technical Advisory Team. These scenarios accounted for other evacuation conditions of interest, such as the actual county evacuation response rates to directed evacuation orders, Monroe County staged evacuation and Monroe County estimated population trends. The running of these additional scenarios produced a wider range of potential hurricane evacuation outcomes, which could then be compared and contrasted with the six baseline policy-generated results to provide a greater breadth of information to guide hurricane evacuation planning and policy.

Traffic Study Phases

To accomplish its fundamental tasks, the South Florida Regional Hurricane Evacuation Traffic Study process was divided into the four phases described in **Table 2.**

The first phase of the model process entailed a detailed assessment of the PBS&J regional model and the Miller Consulting Inc. model: 2004 DCA Update. It was at this point that the Technical Advisory Team was formed to help guide the model update process and conduct these assessments. The TAT collaborated with SFRPC staff to complete a detailed review of the model inputs, assumptions, data and data sources used in the previous models. A stakeholder assessment was also completed.

These initial assessments were used to define the desired capabilities of the South Florida regional model and to structure the model update process. The Technical Advisory Team also helped to draft a description of test scenarios.

The second phase of the model update focused on gathering the best available base data for the traffic modeling and design of the user model. SFRPC staff produced a document detailing the specifics of the data needed to conduct the Traffic Study update and began working closely with its local partners to collect base data.

The third phase of the model update focused on completing and finalizing the base data, creating the six baseline scenario datasets, carrying out the traffic modeling and completing the user model. FDOT - District IV conducted the traffic modeling to generate outcomes for the six baseline scenarios and a technical support document explaining the traffic model and user model setup, data sources and operation was also drafted.

[1] Corresponds to the Saffir-Simpson scale.

Table 2: 2006 South Florida Regional Hurricane Evacuation Traffic Study Process	
Phase 1	• Technical Advisory Team Formation • Assessment of existing PBS&J and Miller Inc. models • Identification of desired capabilities of regional model update (stakeholder assessment) • Initial structuring of model update process • Preliminary description of test scenarios
Phase 2	• Outline of model update process • Base data collection
Phase 3	• Completion of base data collection • Finalization and validation of base model data • Design of six baseline scenarios • Completion of traffic modeling by FDOT using base data to generate six baseline scenario outcomes • Update of PBS&J 2004 model with base data and new features to create the 2006 user model framework • Finalization of the user model with results produced by FDOT traffic modeling • Composition of 2006 model technical support document
Phase 4	• Test scenario runs on user model • Presentation of test scenario outcomes

The fourth phase of the model update focused on running and analyzing the test scenarios identified through the model update process. SFRPC staff presented the outcomes of these test simulations to the Technical Advisory Team in September 2006.

The Technical Advisory Team played an integral role in updating the Traffic Study. **Table 3** presents a detailed summary of the Technical Advisory Team's participation during each model update phase.

Table 3: Technical Advisory Team Involvement		
Meeting Date	Description	Model Phase
February 3, 2006	Presentation of model update process, assessment of existing PBS&J model and guidance on model update	Phase 1
March 27, 2006	Feedback and specification of model update needs	Phase 1
April 13, 2006	Meeting with Monroe County TAT to discuss Monroe County concerns about the model update process	Phase 1
April 20, 2006	Model update specifications document delivered to TAT	Phase 2
May 15, 2006	Meetings with Broward County and Miami-Dade County TAT members to discuss and validate updated behavioral assumptions	Phase 2
May 31, 2006	Meeting with Monroe County TAT to discuss Keys behavioral assumptions and PBS&J model	Phase 2
June 10, 2006	Follow-up meeting with Monroe County to discuss and validate behavioral assumptions	Phase 2
August 8, 2006	Draft Technical Support Document sent to Technical Advisory Team for review	Phase 3
August 15, 2006	TAT meeting to discuss and validate 2006 user model, baseline scenario outcomes, and technical support document	Phase 3
September 2006	Test scenario results presented to TAT	Phase 4

SECTION 2: TRAFFIC MODEL BASE DATA AND OPERATIONS

The 2006 South Florida Regional Hurricane Evacuation Traffic Study is specifically designed to measure the cumulative impacts of a regional evacuation. The Study, through its traffic modeling, generates results in the form of clearance times, traffic congestion maps, public shelter demand and total evacuating people and vehicles by origin and by destination for a set of six baseline scenarios. The Study also results in an interactive user model, informed by the traffic modeling, that provides the capability to test alternative hurricane evacuation scenarios. **Figure 1** illustrates the general traffic model and user model operation process.

The basic process underlying the 2006 South Florida Regional Hurricane Evacuation Traffic Study traffic modeling is: 1) total evacuating vehicles and people by origin (model evacuation zone) and total evacuating vehicles and people by destination (public shelter, local residence, out of county, out of region, hotel/motel) are calculated by analyzing base data (evacuation behavior data is combined with dwelling unit and population information), 2) the traffic model is run by FDOT-District IV using the vehicles by destination data 3) the traffic model generates a map of traffic congestion across the South Florida Region's roadways under each of the evacuation scenarios, traffic loading factors for the regional roadways and trip assignments/traffic volumes and clearance times for a set of critical links.. These traffic model results form the foundation for the user model's traffic analysis. The traffic model's loading factors onto the regional roadways and the trip assignments and clearance times for the critical links are built into the user-model to create the baseline traffic evacuation conditions and outcomes in the user model. The user model is programmed with the same base data as the traffic model.

Data Collection

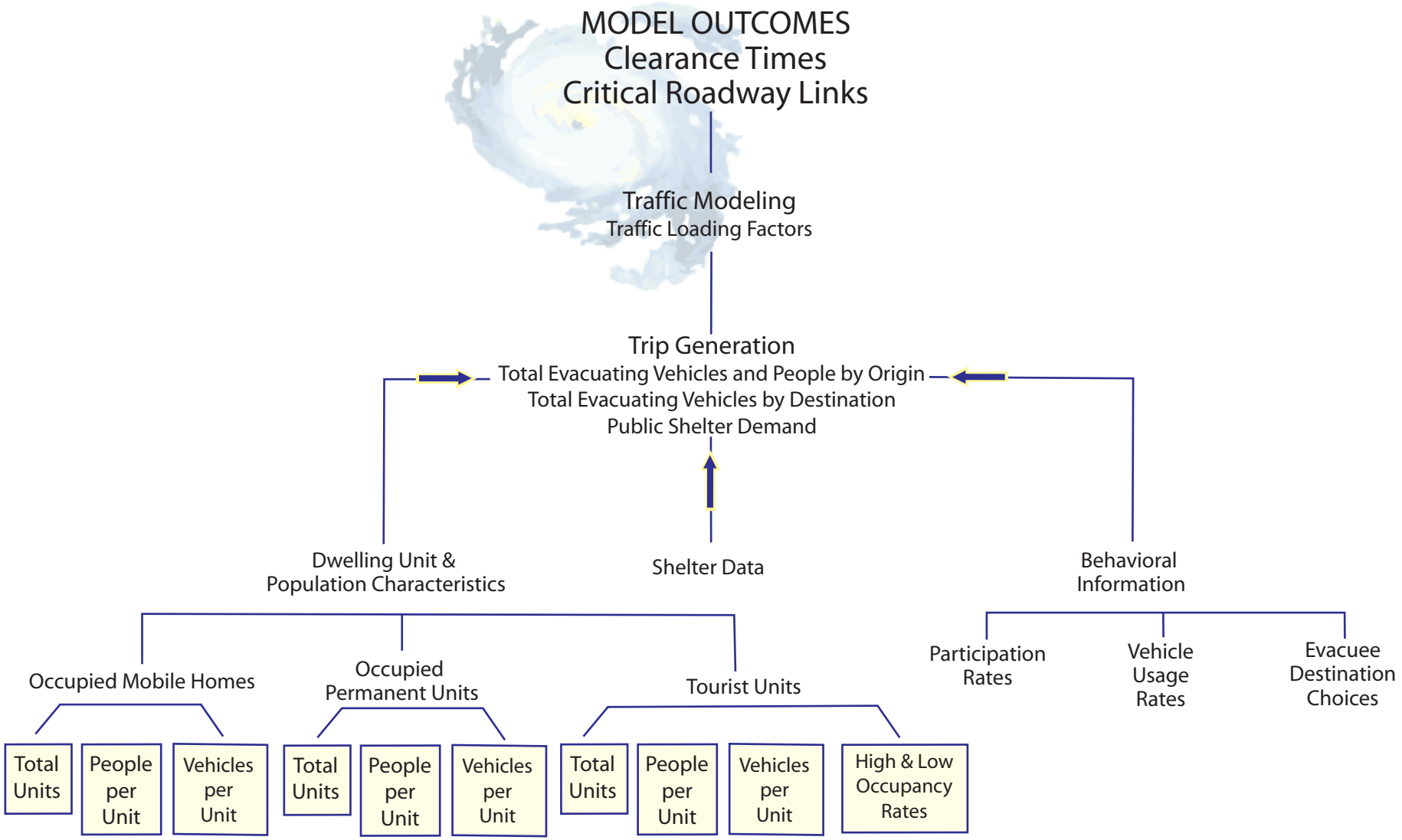
Four types of data input form the base data for the user and the traffic model: behavioral, dwelling unit and population, shelter and traffic network information. The 2006 South Florida Regional Hurricane Evacuation Traffic Study was both constrained and enriched by the availability of secondary data sources containing the necessary information.

Dwelling Unit and Population Data

The dwelling unit and population data used in model calculations captures dwelling unit characteristics, including the total number of occupied permanent dwelling units, mobile home units and tourist units per county. It also catalogues tourist unit occupancy rates, and vehicles per unit, while capturing population information through people per unit. **Table 4** lists all dwelling unit and population data used in the model.

The tourist unit occupancy rate is an important factor in determining model outcomes. Low tourist occupancy and high tourist occupancy rates are applied to each of the three baseline scenario storm conditions, based on storm intensity as defined by the Saffir-Simpson Scale, (1, 2, 3) to generate A (A = low tourist occupancy) and B (B = high tourist occupancy) alternative outcomes.

Figure 1: Model Operation



★ The traffic model operates using data at the Traffic Analysis Zone (TAZ) and Census Block Group (CBG) level.

★ The user model operates at the model evacuation zone level to create a practical and easy to navigate modeling environment for the everyday user. However, its underlying structure is TAZ and CBG data because it is informed by the traffic model data & analysis.

Table 4: Dwelling Unit and Population Data Inputs	
Dwelling Unit Type and Count	Dwelling Unit Characteristics
Total Permanent Occupied Units	People/permanent occupied unit
	Vehicles/permanent unit
Total Mobile Home Units	People/mobile home unit
	Vehicles/mobile home unit
Total Seasonal Tourist Units	People/tourist unit
	Vehicles/tourist unit
	High and low occupancy rates

A variety of data sources were used to update the dwelling unit and population data across the three counties. The Planning Services Division of the Broward County Urban Planning & Redevelopment Department provided all population and dwelling unit data for Broward County. Miami-Dade County data on tourist units and occupied permanent units was provided by the Miami-Dade County Department of Planning and Zoning, Planning Division, Research Section. Miami-Dade County mobile home unit data was provided by the Miami-Dade County Office of Emergency Management. The Greater Miami Convention Visitor's Bureau, Research Division served as the source for Miami-Dade County tourist unit occupancy rates.

Monroe County permanent dwelling unit and mobile home unit counts are vintage 2004. They reflect the best available comprehensive dataset, based on the tracking of Monroe County permits through the ROGO system, used by the Florida Department of Community Affairs 2004 update to the Miller Consulting, Inc. model (originally developed in 2000). Because the Miller Model is based on a different geography than the regional model, the SFRPC staff had to convert the 2004 unit counts to census block geography to incorporate them into the current model. Vehicles per unit, people per unit and unit occupancy rates are from the US Census Bureau 2000 Census of Population and Housing. A 2006 Monroe County lodging license dataset from the Florida Department of Business and Professional Regulation was the source for the Traffic Study's Monroe County tourist unit counts.

Monroe County permanent unit occupancy rates specific to each census block group, are from the 2000 Census. To calculate the number of permanent occupied units, these occupancy rates were applied to the total permanent unit counts by census block group (updated in the model to reflect the FDCA 2004 update to the Miller Model).

Behavioral Inputs

In the baseline and user models, the dwelling unit and housing data is combined with behavioral data to calculate the total number of evacuating people and vehicles under each baseline scenario.

Behavioral data used in model calculations includes evacuation participation rate percentages. Participation rates capture how many people occupying different unit types (permanent occupied units, mobile home units and tourist units) typically leave in an evacuation, depending on storm category. Behavioral data also includes vehicle usage rates per dwelling unit type (used to calculate the total number of household vehicles used during an evacuation) and the types of destinations to which people choose to evacuate. **Table 5** provides a complete listing of all behavioral data inputs.

The behavioral variables which play the largest role in shaping model outcomes are hurricane evacuation participation rates and evacuee destination choices.

Table 5: Behavioral Data Inputs

Permanent and Mobile Home Dweller Behavioral Data	Tourist Unit Behavioral Data
Participation Rate	Participation Rate
Vehicle Usage Rate	Vehicle Usage Rate
All Destination Choices	All Destination Choices
Shelter	Shelter
Hotel or Motel	Hotel or Motel
Friend or Relative	Out of County
Out of the County	
Out of County Destination Choice Details	Out of County Destination Choice Details
Out of Region	Out of Region
Adjacent County Friend or Relative	Adjacent County Hotel
Adjacent County Shelter	Adjacent County Friend or Relative
Adjacent County Hotel	

The 2006 South Florida Regional Hurricane Evacuation Traffic Study and its user model include behavioral data gathered from behavioral studies (for a complete listing see **Bibliography**), from the PBS&J 2004 unpublished regional model and from the Miller Model.

The traffic and user models incorporate the following behavioral trends illustrated by the behavioral research studies' findings:

- More people from mobile homes than from other dwelling unit types use public shelters[2].
- Surge vulnerable zones (coastal areas) have higher participation rates than non-surge prone inland areas.[3]

[2] *Hurricane Frances Post-Storm Assessment.* p.43.

Hurricane Jeanne Post-Storm Assessment. Federal Emergency Management Agency. 2005. 7 July 2006 p.49
http://chps.sam.usace.army.mil/USHESdata/Assessments/2004Storms/2004_hurricane_season_page.htm

- Shadow evacuation rates range between 5% and 10% based on the average shadow evacuation of 8% demonstrated by the Hurricane Floyd, Hurricane Frances and Hurricane Jeanne behavioral studies.[4]
- The majority of evacuees in the Southeast Florida Region, approximately 70%, stay close to home or in-county.[5]
- The preferred destination for resident evacuees is the home of a local friend or relative, followed by a hotel/motel.[6]
- Less than 10% of the population travels to public shelters[7]

The six baseline scenario outcomes are calculated using policy-based behavioral assumptions. The six baseline scenarios analyzed in the Traffic Study reflect county evacuation policies and represent the directed evacuation orders for selected county evacuation zones that would be issued under specific storm conditions. These assumptions include 100% rates for all evacuation zones that would be directed to evacuate under specific storm conditions. For example, 100% evacuation participation within Broward County Evacuation Zone A was input into the modeling for baseline scenarios 1A and 1B to capture the expected participation rate, in line with the intent of the Broward County evacuation policy in place. Under Category 1 and 2 storm conditions, Broward County directs all people in Evacuation Zone A to evacuate. Because the number of people directed to evacuate increases according to expected storm intensity, behavioral data was changed accordingly for each baseline scenario to reflect each county's evacuation policies. It is through the adjustment of the behavioral variables, namely evacuation participation rates and destination choices, that the dynamics of different hurricane evacuation scenarios can be accommodated.

The following tables present the specific policy-based behavioral values input into the six baseline scenarios (1A, 1B, 2A, 2B, 3A, and 3B, as described in **Table 1**) for Monroe, Miami-Dade and Broward Counties. When looking at the tables below, it is important to remember that

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[3] "Post-Floyd Behavioral Survey Results." Florida Division of Emergency Management. 26 July 2006 http://floridadisaster.org/bpr/Response/Plans/Nathaz/hurricanes/floyd_behavior.htm pp. 6-7

[4] Post-Floyd Behavioral Survey Results.
Hurricane Frances Post-Storm Assessment.
Hurricane Jeanne Post-Storm Assessment.

[5] *10 Years After Hurricane Andrew*. 2002. Dr. Hugh Gladwin, ed. Florida International University Institute for Public Opinion Research. 8 July 2006. http://www.fiu.edu/orgs/ipor/ha10/index.html

Hurricane Floyd Evacuation Measured by the FIU/Florida Poll: Preliminary Report #1. 1999. Dr. Hugh Gladwin, ed. Florida International University's International Hurricane Center and Institute for Public Opinion Research. 20 May 2006 http://www.fiu.edu/orgs/ipor/hurricane/index.htm

Hurricane Frances Post-Storm Assessment.

Hurricane Jeanne Post-Storm Assessment.

[6] "Post-Floyd Behavioral Survey Results." pp. 6-7

[7] Post-Floyd Behavioral Survey Results." pp. 6-7

Hurricane Ivan Post-Storm Assessment. Federal Emergency Management Agency. 2005. 7 July 2006 http://chps.sam.usace.army.mil/USHESdata/Assessments/2004Storms/2004_hurricane_season_page.htm

a Category 1-2 storm correlates to the conditions of baseline scenario 1, a Category 3 storm correlates to baseline scenario 2 conditions and a Category 4-5 storm correlates to baseline scenario 3 conditions.

The tables below cite the data sources used to inform the behavioral assumptions input into the model. Under each table, is a summary that interprets the table contents and explains the underlying assumptions for the values used in modeling. The Monroe County tables compare the 2006 South Florida Regional Hurricane Evacuation Traffic Study behavioral inputs to those used in the Miller Model.

Monroe County Policy-Based Behavior Tables

Table 6: Monroe County Tourist Unit Occupancy Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit Occupancy Rates			
Low Occupancy	45%	45%	45%
High Occupancy	85%	85%	85%

Miller Model					
Lower Keys		Middle Keys		Upper Keys	
Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5
45%	45%	45%	45%	45%	45%
72%/64%	72%/64%	64%	64%	70%	70%

Source: "Monroe County Trend Report" by Smith Travel Research, 2006

Summary: Table 6 presents the low and high tourist occupancy rates in Monroe County, which inform the calculations that determine the total number of evacuating tourist and tourist vehicles under each baseline scenario. Tourist occupancy rates remain the same across all baseline scenarios (they do not vary by storm category); the low tourist occupancy rate is 45% and the high tourist occupancy rate is 85%. 45% is used to determine the Monroe County evacuation circumstances under scenarios 1A, 2A and 3A, which model low tourist occupancy conditions, while 85% is the value used in scenarios 1B, 2B and 3B, which simulate high tourist occupancy conditions. The Monroe County tourist occupancy percentages shown are not tied to a specific time of the year, but are used to define the low and high range of tourist occupancy values in the Keys. The high occupancy rate signifies any high tourist presence day in Monroe County and would characterize special events like the July 4th weekend or lobster mini-season irrespective of the time of year. The low occupancy rate represents any day of low tourist presence in the Keys, such as a mid-week day in August.

Table 7: Monroe County Participation Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Participation Rates			
Permanent Occupied Unit	62%	100%	100%
Mobile Home Unit	100%	100%	100%
Tourist Unit	100%	100%	100%

Miller Model					
Lower Keys		Middle Keys		Upper Keys	
Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5
45%	60%	68%	80%	75%	85%
90%	95%	90%	95%	90%	95%
100%	100%	100%	100%	100%	100%

Average participation rate for a Category 1 or 2 storm derived by looking at participation rate data for Hurricanes Ivan (2004) and Georges (1998). Sources: PBS&J Hurricane Georges Assessment, 1999 and Hurricane Ivan FEMA Post-storm Assessment, 2005.

Source: Monroe County Emergency Management Policy.

Summary: The 2006 South Florida Regional Hurricane Evacuation Traffic Study looks at three unit types, permanent occupied units, mobile home units and tourist units, as the basis for determining the total evacuating population and vehicles for each of the six baseline scenarios. Table 7 depicts Monroe County's permanent occupied unit, mobile home unit and tourist unit

participation rates under each of the storm category conditions (Category 1-2, Category 3, Category 4-5). Participation rates indicate the proportion of a population expected to participate in an evacuation. Under Category 1-2 storm conditions, 62% of permanent occupied units participate in the evacuation, while 100% of tourists and mobile home unit occupants evacuate. The 62% participation rate reflects the average evacuation participation rate measured in the PBS&J Hurricane Georges Assessment and the Hurricane Ivan FEMA Post-storm Assessment. The 100% participation reflects the fact that, for any hurricane event, Monroe County Emergency Management directs all persons that live in mobile homes, travel trailers, recreational vehicles (RVs), and boats and all tourists to evacuate.

Under Category 3 and above storm conditions for the six baseline scenarios, all unit types experience 100% participation rates. This is a policy-based situation. Under a Category 3 or higher storm, all Monroe County residents are directed to evacuate and should, theoretically, leave the County. The model assumes that they do. In addition, for any hurricane event, all persons that live in mobile homes, travel trailers, recreational vehicles (RVs), and boats and all tourists are directed to evacuate.

Table 8: Monroe County Vehicle Usage Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Vehicle Usage			
Permanent Occupied Unit	80%	80%	80%
Tourist Unit	100%	100%	100%

Miller Model					
Lower Keys		Middle Keys		Upper Keys	
Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5
69%	69%	70%	70%	71%	71%
100%	100%	100%	100%	100%	100%

Source: PBS&J 2004 Regional Hurricane Evacuation Model

Summary: Table 8 presents Monroe County vehicle usage rates for the three storm scenarios (Category 1-2, Category 3 and Category 4-5). Vehicle usage rates determine how many vehicles evacuees will drive out of the total vehicles owned, by unit type. Vehicle usage rates are input into model calculations to determine how many vehicles will be evacuating and traveling on the roadway under each baseline scenario. For all baseline scenarios, permanent occupied units, including mobile home units, have a vehicle usage rate of 80%, while tourist units have a vehicle usage rate of 100%. The 100% tourist vehicle usage rate reflects the fact that, for any hurricane event, all Monroe County tourists are directed to evacuate and that tourists are expected to use all vehicles in their possession to evacuate.

Table 9: Monroe County Permanent Occupied Unit and Mobile Home Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Permanent Occupied Unit and Mobile Home Unit Destination Choices			
Out of Monroe County	75%	100%	100%
To Local Residence	20%	0%	0%
To Local Shelter	5%	0%	0%
To Local Hotel	0%	0%	0%

Miller Model					
Lower Keys		Middle Keys		Upper Keys	
75%	95%	80%	95%	85%	100%
25%	5%	20%	5%	15%	0%
0%	0%	0%	0%	0%	0%
0%	0%	0%	0%	0%	0%

Sources: PBS&J Hurricane Georges Assessment, 1999; Hurricane Ivan FEMA Post-storm Assessment, 2005, Monroe County Emergency Management Policy, Monroe County Technical Advisory Team

Summary: Table 9 illustrates the refuge locations to which Monroe County evacuees choose to travel. Under a Category 1-2 storm scenario, 75% of Monroe County evacuees travel out of Monroe County, 20% evacuate to a local residence and 5% journey to a local shelter. These values are based on collected data. Both of the above assessments, sited as sources, indicate that the majority of Keys evacuees choose to travel to the home of a friend or a relative and that few people choose to go to public shelters. These assessments also indicate that approximately 25% of evacuees traveled to safe destinations in county under Hurricane Georges and Ivan evacuation orders. The Monroe County Technical Advisory Team further indicated that if people remain in Monroe County under a Category 1-2 storm, they will most likely to go to their neighbors' or friends' homes. All of the above data resulted in a 20% assignment of trips to local residences under a Category 1-2 storm scenario. Under a Category 3 or higher storm scenario, the model assumes that 100% of Monroe County residents travel out of Monroe County. From a policy perspective, 100% of Keys residents would be directed to evacuate out-of-county under these storm conditions.

Table 10: Monroe County Tourist Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit Destination Choices			
Out of Monroe County	99%	100%	100%
To Local Shelter	1%	0%	0%

Miller Model					
Lower Keys		Middle Keys		Upper Keys	
100%	100%	100%	100%	100%	100%
0%	0%	0%	0%	0%	0%

Sources: Monroe County Emergency Management Policy; PBS&J 2004 Regional Hurricane Evacuation Study, Miller Model. These numbers reflect the Monroe County policy that requires all (100%) Monroe County tourists to evacuate the County under Category 1-5 storm situations.

Summary: Table 10 portrays the destinations to which Monroe County tourists evacuate. Under a Category 1-2 (baseline scenarios 1A and1B) storm situation, 99% of tourists travel out of Monroe County, while 1% seek refuge at a local public shelter. Under Category 3 or higher storm conditions, there are no local shelters open in Monroe County. Therefore, all tourists travel out of County.

Table 11: Monroe County Tourist Out-of-County Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit Out-of-County Destination Choices			
Out-of-Region	60%		
To Miami Dade County Residence	15%		
To Miami Dade County Hotel	5%		
To Broward County Residence	15%		
To Broward County Hotel	5%		

Miller Model		
Lower Keys	Middle Keys	Upper Keys
Equivalent Data Not Included		

Sources: Monroe County Technical Advisory Team

Summary: Table 11 describes the out-of-county destinations to which tourists travel during an evacuation. Tourist unit out-of-county destinations were broken out for Monroe County because Monroe County has the highest proportion of tourists to total evacuees who must fully exit the county during all hurricane events. Monroe County tourist out-of-county choices play a greater role in cross-county traffic flows than tourists leaving Miami-Dade and Broward Counties.

Under all hurricane conditions, 60% of all tourists leaving Monroe County travel out of the South Florida Region. The other 40% travel to other counties in South Florida: 15% travel to a Miami-Dade County residence, 5% travel to a Miami-Dade County hotel, 15% travel to a Broward County residence and 5% travel to a Broward County hotel. Because traditional behavioral studies do not analyze the specifics of tourist evacuation behavior, the SFRPC, looked toward the Monroe County Technical Advisory Team (M-TAT), with its expert local knowledge, to guide these trip assignments. The M-TAT articulated that many tourists in the Keys are visiting from Miami-Dade and Broward Counties. When an evacuation order is called, these visitors return to their homes. The M-TAT also stated that while at least half of tourists choose to leave the region when an evacuation order is called, about 1/5 choose to evacuate to hotels in Miami-Dade and Broward Counties.

Table 12: Monroe County Permanent Occupied Unit/Mobile Home Unit Out-of-County Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Monroe County	**Category 1-2**	**Category 3**	**Category 4-5**
Permanent Occupied Unit/Mobile Home Unit Out-of-County Destination Choices			
Out-of-Region	40%		
To Miami Dade County Residence	29%		
To Miami Dade County Hotel	10%		
To FIU Shelter	1%		
To Broward County Residence	15%		
To Broward County Hotel	5%		

Miller Model		
Lower Keys	Middle Keys	Upper Keys
Equivalent Data Not Included		

Sources: PBS&J Hurricane Georges Assessment, 1999; Hurricane Ivan FEMA Post-storm Assessment, 2005; Monroe County Technical Advisory Team

Summary: Table 12 describes the out-of-county destinations to which Monroe County residents travel during an evacuation. Under all hurricane conditions, 40% of all residents leaving Monroe County travel out of the South Florida Region. The other 60% travel to other locations in South Florida: 29% travel to a Miami-Dade County residence, 10% travel to a Miami-Dade County hotel, 1% travel to the FIU shelter in Miami-Dade County, 15% travel to a Broward County residence and 5% travel to a Broward County hotel. Because traditional behavioral studies do not analyze the specifics of tourist evacuation behavior, the SFRPC, looked toward the Monroe County Technical Advisory Team (M-TAT), with its expert local knowledge, to guide these trip assignments. The M-TAT informed us that the preferred destination for many out-of-County evacuees is the Orlando and the northern Florida area, but that many evacuees also stay in Miami-Dade County to await re-entry. This fact is the basis for the higher percentage of evacuees going to Miami-Dade County.

The 1% traveling to the FIU shelter is based on the information gathered by the PBS&J Hurricane Georges Assessment, 1999 and the Hurricane Ivan FEMA Post-storm Assessment, 2005. These studies also indicate that the majority of Monroe County evacuees travel to the home of a friend or relative. The M-TAT specified that many evacuees go to stay with friends and family in Miami-Dade and Broward Counties. This fact is the basis for the higher percentage of evacuees assigned to Miami-Dade and Broward County residences than hotels.

Miami-Dade County Policy-Based Behavioral Tables

Table 13: Miami-Dade County Tourist Unit Occupancy Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit Occupancy Rates			
Low Occupancy	50%	50%	50%
High Occupancy	85%	85%	85%

Source: "Miami-Dade Monthly Occupancy and Room Rate by Region" prepared by the Greater Miami Convention Visitor's Bureau, Research Division, 2006

Summary: Table 13 presents the low and high tourist occupancy rates in Miami-Dade County, which inform the calculations that determine the total number of evacuating tourists and tourist vehicles under each baseline scenario. Tourist occupancy rates remain the same across all baseline scenarios (they do not vary by storm category); the low tourist occupancy rate is 50% and the high tourist occupancy rate is 85%. 50% is used to determine the Miami-Dade County evacuation circumstances under scenarios 1A, 2A and 3A, which model low tourist occupancy conditions, while 85% is the value used in scenarios 1B, 2B and 3B, which simulate high tourist occupancy conditions. The Miami-Dade County tourist occupancy percentages shown are not tied to a specific time of the year, but are used to define the low and high range of tourist occupancy values in Miami-Dade County. The high occupancy rate signifies any high tourist presence day in Miami-Dade County and the low occupancy rate represents any day of low tourist presence in Miami-Dade County.

Table 14: Miami-Dade County Participation Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study Update			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Participation Rates			
Permanent Occupied Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	10%	100%	100%
County Evacuation Zone C	5%	10%	100%
Inland Areas	5%	5%	10%
Mobile Home Units			
All Areas	100%	100%	100%
Tourist Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	80%	100%	100%
County Evacuation Zone C	80%	90%	100%
Inland Areas	80%	90%	100%

Sources: Miami-Dade County Office of Emergency Management Policy.

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Post-Hurricane Floyd Behavioral Study.

Source: PBS&J 2004 Regional Hurricane Evacuation Model.

Summary: The 2006 South Florida Regional Hurricane Evacuation Traffic Study looks at three unit types, permanent occupied units, mobile home units and tourist units, as the basis for determining the total evacuating population and vehicles for each of the six baseline scenarios. Table 14 depicts Miami-Dade County's permanent occupied unit, mobile home unit and tourist unit participation rates under each of the storm category conditions (Category 1-2, Category 3, Category 4-5). Participation rates indicate the proportion of a population expected to participate in an evacuation.

Because the baseline scenario behavioral assumptions are based on the county's evacuation policies, the values highlighted in green reflect the Miami-Dade County Evacuation Zones and populations that would be directed to evacuate under the specified storm conditions. Miami-Dade County Evacuation Zone A would be directed to evacuate under Category 1-2 storm conditions, whereas Zones A and B would be directed to evacuation under a Category 3 storm and Zones A, B and C would be directed to evacuate under a Category 4-5 storm. Therefore, all residents and tourists in the affected evacuation zones would, from a policy perspective, evacuate. All mobile home residents would be directed to evacuate by the Miami-Dade County Emergency Operations Center under any hurricane conditions (Category 1-5) and, when necessary, under impending tropical storm conditions. Therefore, 100% of mobile homes, as shown in the table above, are assumed to evacuate under all storm conditions and baseline scenarios.

The evacuation participation rates shown in purple represent the shadow evacuation for the evacuation zones and inland areas outside the directed evacuation order, under specific storm conditions. The shadow evacuation rates range between 5% and 10% based on the average shadow evacuation of 8% demonstrated in the above-referenced studies and assessments. A greater shadow evacuation by those closest to the evacuation zones(s) directed to evacuate is assumed to occur. For example, 10% of permanent occupied units in County Evacuation Zone B are assumed to evacuate under a Category 1-2 storm as shadow evacuees compared to only 5% leaving County Evacuation Zone C and Inland Areas under the same storm conditions.

The values shown in salmon represent the expected tourist shadow evacuation for the evacuation areas and inland areas outside the directed evacuation order, under specific storm conditions. It is assumed that tourist shadow evacuation rates increase as storm intensity increases.

Table 15: Miami-Dade County Vehicle Usage Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Vehicle Usage			
Permanent Occupied Unit/Mobile Home Unit			
County Evacuation Zone A	80%	80%	80%
County Evacuation Zone B, C and Inland Areas	70%	70%	70%
Tourist Unit			
All Areas	100%	100%	100%

Source: PBS&J 2004 Regional Hurricance Evacuation Model

Summary: Table 15 presents Miami-Dade County vehicle usage rates for the three storm scenarios (Category 1-2, Category 3 and Category 4-5). Vehicle usage rates determine how many vehicles evacuees will drive out of the total vehicles owned, by unit type. Vehicle usage rates are input into model calculations to determine how many vehicles will be evacuating and traveling on the roadway under each baseline scenario. For all baseline scenarios, permanent occupied units, including mobile home units, in County Evacuation Zone A have a vehicle usage rate of 80%, while those in Evacuation Zone B, Evacuation Zone C and in Inland Areas have a 70% vehicle usage rate. Tourist units have a vehicle usage rate of 100%. The 100% tourist vehicle usage rate reflects the fact that, for any hurricane event, all Miami-Dade County tourists are expected to utilize all vehicles in their possession during an evacuation.

Table 16: Miami-Dade County Permanent Occupied Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Permanent Occupied Unit Destination Choices			
Out-of-County			
All Areas	30%	30%	35%
To Local Shelter			
All Areas	2%	5%	10%
To Local Residence			
County Evacuation Zone A	58%	55%	45%
County Evacuation Zone B	63%	60%	50%
County Evacuation Zone C	63%	60%	50%
Inland Areas	67%	64%	50%
To Hotel/Motel			
County Evacuation Zone A	10%	10%	10%
County Evacuation Zone B	5%	5%	5%
County Evacuation Zone C	5%	5%	5%
Inland Areas	1%	1%	5%

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Post-Hurricane Floyd Behavioral Study; Hurricane Floyd Evacuation Measured by the FIU/Florida Poll, Dr. Hugh Gladwin, Florida International University International Hurricane Center and Institute for Public Opinion Research, 1999; 10 Years After Hurricane Andrew, Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002

Summary: Table 16 describes the destinations to which Miami-Dade County permanent occupied unit residents travel during an evacuation. Destination choice is an important component of hurricane evacuation traffic modeling. It indicates where trips, originating from specific areas within a county are traveling to. This data is entered into the FDOT-District IV's traffic model to enable the traffic model to chart how evacuation trips travel across the region's roadways. This information also informs calculations of total public shelter demand and local hotel demand.

Under Category 1-2 storm conditions, 30% of all residents evacuate out of county and 2% travel to a local shelter. The percentage of those traveling to local residences varies, depending on place of origin, from 58%-67%. Under a Category 3 storm scenario, 30% of all residents evacuate out-of-county and 5% travel to a local shelter. With a slight increase in those traveling to a local shelter, the percent of residents traveling to a local residence slightly decreases to a range of 55% to 64%, depending on place of origin. Under Category 1-2 and Category 3 storm conditions, 10% of evacuees from County Evacuation Zone A travel to a hotel, 5% of evacuees from County Evacuation Zones B and C travel to hotels and 1% from inland areas seek refuge in hotels. Under Category 4-5 storm conditions, 35% of permanent occupied unit evacuees travel out-of-county, 10% travel to local shelters, 45-50% travel to a local residence and between 5-10%, depending on place of origin, travel to hotels/motels.

The assumptions informing this data are that 1) the majority of evacuees stay close to home or stay in-county and travel to the home of a friend or relative following the "shelter in place" philosophy; 2) areas closest to evacuation zones directed to evacuate will have the highest percentages of shadow evacuation; 3) shadow evacuation rates range between 5% and 10% based on the average shadow evacuation of 8% demonstrated by the Hurricane Floyd, Hurricane Frances and Hurricane Jeanne behavioral studies; and 4) public shelter use is equal to or less than 10%.

Table 17: Miami-Dade County Mobile Home Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Mobile Home Destination Choices			
Out-of-County	30%	30%	35%
To Local Shelter	5%	8%	10%
To Local Residence	64%	61%	54%
To Hotel/Motel	1%	1%	1%

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Hurricane Floyd Behavioral Study; Hurricane Floyd Evacuation Measured by the FIU/Florida Poll, Dr. Hugh Gladwin, Florida International University International Hurricane Center and Institute for Public Opinion Research, 1999; 10 Years After Hurricane Andrew, Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002.

Summary: Table 17 indicates the destinations to which Miami-Dade County mobile home unit residents journey to during a hurricane evacuation. Destination choice is an important component of hurricane evacuation traffic modeling. It indicates where trips originating from specific areas within a county are traveling to. This data is entered into the FDOT-District IV's traffic model to enable the traffic model to chart how evacuation trips travel across the region's roadways. This information also informs calculations of total public shelter demand and local hotel demand.

Under Category 1-2 (Scenario 1) conditions, 30% of mobile home unit residents travel out of Miami-Dade County, 5% travel to a local shelter, 64% travel to a local residence and 1% travel to a local hotel/motel. Under Category 3 (Scenario 2) conditions, 30% of mobile home unit residents travel out of Miami-Dade County, 8% travel to a local shelter, 61% travel to a local

residence and 1% travel to a local hotel/motel. Under Category 4-5 (Scenario 3) conditions 35% of mobile home unit residents travel out of Miami-Dade County, 10% travel to a local shelter, 54% travel to a local residence and 1% travel to a local hotel/motel.

Shelter usage by mobile home unit residents increases with storm intensity. The above-listed behavioral studies do not differentiate between evacuees from mobile homes and permanent units in terms of destination choices, except to note that mobile home residents are more likely to use public shelters. These studies establish that the majority of evacuees stay close to home or stay in-county and travel to the home of a friend or relative following the "shelter in place" philosophy of Miami-Dade County. Therefore, the mobile home destination choice assignments listed in Table 17 parallel those of permanent occupied unit residents shown in Table 16, except for the fact that a greater percentage of mobile home residents are expected to travel to and are assigned to public shelters.

Table 18: Miami-Dade County Tourist Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Destination Choices			
Out-of-County			
County Evacuation Zone A	74%	79%	88%
County Evacuation Zone B	74%	79%	88%
County Evacuation Zone C	74%	79%	88%
Inland Areas	99%	99%	98%
To Local Shelter			
County Evacuation Zone A	1%	1%	2%
County Evacuation Zone B	1%	1%	2%
County Evacuation Zone C	1%	1%	2%
Inland Areas	1%	1%	2%
To Inland Hotels			
County Evacuation Zone A	25%	20%	10%
County Evacuation Zone B	25%	20%	10%
County Evacuation Zone C	25%	20%	10%
Inland Areas	0%	0%	0%

Source: Miami-Dade County Technical Advisory Team, SFRPC.

Summary: Table 18 portrays the destinations to which Miami-Dade County tourists evacuate. Because traditional behavioral studies do not analyze the specifics of tourist evacuation behavior, the SFRPC looked to the Miami-Dade County Technical Advisory Team, with its expert local knowledge, to guide these trip assignments. The Miami-Dade County Technical Advisory Team informed the SFRPC that tourists from County Evacuation Areas often travel to sister hotels inland, especially under Category 1-3 storm conditions. Hotels in Evacuation Areas often have or make arrangements with their inland counterparts to house a portion of their evacuating hotel guests.

Table 19: Miami-Dade County Permanent Unit/Mobile Home Unit Out-of-County Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study Update			
Miami-Dade County	**Category 1-2**	**Category 3**	**Category 4-5**
Permanent Occupied Unit and Mobile Home Unit Out-of-County Destination Choices			
Out-of-Region	50%		
To Broward County Residence	45%		
To Broward County Hotel	5%		

Sources: "10 Years After Hurricane Andrew", Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002; Miami-Dade County Technical Advisory Team

Summary: Table 19 presents the out-of-county destinations to which Miami-Dade County permanent occupied unit and mobile home residents evacuate. This table charts the trips traveling out of the South Florida region and the trips traveling from Miami-Dade County to Broward County within the region. Under all storm conditions, 50% of out-of-county evacuees journey out of region, while 45% travel to a Broward County residence. The remaining 5% travel to a Broward County hotel. The "10 Years After Hurricane Andrew" study by the FIU Institute for Public Opinion Research, 2002, substantiates that people travel between South Florida counties in an evacuation. It captures the number of respondents that traveled to other South Florida counties during Hurricane Andrew and indicates that, on average, about 14% of all evacuees from Broward and Miami-Dade Counties traveled to another county within South Florida. Because behavioral studies demonstrate that the plurality of evacuees travel to the home of a friend or relative, the majority of out-of-county trips to Broward County were assigned to a Broward County Residence.

Broward County Policy-Based Behavior Tables

Table 20: Broward County Tourist Unit Occupancy Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit Occupancy Rates			
Low Occupancy	68%	68%	68%
High Occupancy	86%	86%	86%

2005 Dataset. Planning Services Division, Broward County Urban Planning & Redevelopment Department.

Summary: Table 20 presents the low and high tourist occupancy rates modeled for Broward County, which inform the calculations that determine the total number of evacuating tourists and tourist vehicles under each baseline scenario. Tourist occupancy rates remain the same across all baseline scenarios (they do not vary by storm category); the low tourist occupancy rate is 68% and the high tourist occupancy rate is 86%. 68% is used to determine the Broward County

evacuation circumstances under scenarios 1A, 2A and 3A, which model low tourist occupancy conditions, while 86% is the value used in scenarios 1B, 2B and 3B, which simulate high tourist occupancy conditions. The Broward County tourist occupancy percentages shown are not tied to a specific time of the year, but are used to define the low and high range of tourist occupancy values in Broward County. The high occupancy rate signifies any high tourist presence day in Broward County and the low occupancy rate represents any day of low tourist presence in Broward County.

Table 21: Broward County Participation Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Participation Rates			
Permanent Occupied Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	10%	100%	100%
Inland Areas	5%	5%	10%
Mobile Home Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	100%	100%	100%
Inland Areas	100%	100%	100%
Tourist Units			
County Evacuation Zone A	100%	100%	100%
County Evacuation Zone B	80%	100%	100%
Inland Areas	80%	90%	100%

Source: Broward County Emergency Management Agency Policy.

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Post-Hurricane Floyd Behavioral Study.

Source: PBS&J 2004 Regional Hurricane Evacuation Model.

Summary: The 2006 South Florida Regional Hurricane Evacuation Traffic Study looks at three unit types, permanent occupied units, mobile home units and tourist units, as the basis for determining the total evacuating population and vehicles for each of the six baseline scenarios. Table 21 depicts Broward County's permanent occupied unit, mobile home unit and tourist unit participation rates under each of the storm category conditions (Category 1-2, Category 3, Category 4-5). Participation rates indicate the proportion of a population expected to participate in an evacuation.

Because the baseline scenario behavioral assumptions are based on the county's evacuation policies, the values highlighted in green reflect the Broward County Evacuation Zones and populations that would be directed to evacuate under the specified storm conditions. Broward County Evacuation Zone A would be directed to evacuate under Category 1-2 storm conditions, whereas Zones A and B would be directed to evacuate under a Category 3 and higher storm conditions. Therefore, all residents and tourists in the affected evacuation zones would evacuate, from a policy and modeling perspective. All mobile home residents would be directed to

evacuate by the Broward County Emergency Management Agency under any hurricane conditions (Category 1-5) and, when necessary, under impending tropical storm conditions. Therefore, 100% of mobile homes, as shown in the table above, are assumed to evacuate under all storm conditions and baseline scenarios.

The evacuation participation rates shown in purple represent the shadow evacuation rates for the evacuation zones and inland areas outside the directed evacuation order, under specific storm conditions. The shadow evacuation rates range between 5% and 10% based on the average shadow evacuation of 8% demonstrated in the above-referenced studies and assessments. A greater shadow evacuation by those closest to the evacuation zones(s) directed to evacuate is assumed to occur. For example, 10% of permanent occupied units in County Evacuation Zone B are assumed to evacuate under a Category 1-2 storm as shadow evacuees compared to only 5% leaving inland areas under the same storm conditions.

The values shown in salmon represent the expected tourist shadow evacuation for the evacuation zones and inland areas outside the directed evacuation order, under specific storm conditions. It is assumed that tourist shadow evacuation rates increase as storm intensity increases.

Table 22: Broward County Vehicle Usage Rates

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Vehicle Usage			
Permanent Occupied Unit/Mobile Home Unit			
County Evacuation Area A	80%	80%	80%
County Evacuation Area B	70%	70%	70%
Inland Areas	70%	70%	70%
Tourist Unit			
All Areas	100%	100%	100%

Source: PBS&J 2004 Regional Hurricane Evacuation Model

Summary: Table 22 presents Broward County vehicle usage rates for the three storm scenarios (Category 1-2, Category 3 and Category 4-5). Vehicle usage rates determine how many vehicles evacuees will drive out of the total vehicles owned, by unit type. Vehicle usage rates are input into model calculations to determine how many vehicles will be evacuating and traveling on the roadway under each baseline scenario. For all baseline scenarios, permanent occupied units, including mobile home units, in Evacuation Zone A have a vehicle usage rate of 80%, while those in Evacuation Zone B and in Inland Areas have a 70% vehicle usage rate. Tourist units have a vehicle usage rate of 100%. The 100% tourist vehicle usage rate reflects the fact that, for any hurricane event, all Broward County tourists are expected to utilize all vehicles in their possession during an evacuation.

Table 23: Broward County Permanent Occupied Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Permanent Occupied Unit Destination Choices			
Out-of-County			
County Evacuation Area A	30%	30%	35%
County Evacuation Area B	30%	30%	35%
Inland Areas	30%	30%	35%
To Local Shelter			
County Evacuation Area A	2%	5%	10%
County Evacuation Area B	2%	5%	10%
Inland Areas	2%	5%	10%
To Local Residence			
County Evacuation Area A	58%	55%	45%
County Evacuation Area B	63%	60%	50%
Inland Areas	67%	64%	50%
To Hotel/Motel			
County Evacuation Area A	10%	10%	10%
County Evacuation Area B	5%	5%	5%
Inland Areas	1%	1%	5%

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Post-Hurricane Floyd Behavioral Study; Hurricane Floyd Evacuation Measured by the FIU/Florida Poll, Dr. Hugh Gladwin, Florida International University International Hurricane Center and Institute for Public Opinion Research, 1999; 10 Years After Hurricane Andrew, Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002

Summary: Table 23 describes the destinations to which Broward County permanent occupied unit residents travel during an evacuation. Destination choice is an important component of hurricane evacuation traffic modeling. It indicates where trips originating from specific areas within a county are traveling to. This data is entered into the FDOT-District IV's traffic model to enable the traffic model to chart how evacuation trips travel across the region's roadways. This information also informs calculations of total public shelter demand and local hotel demand.

Under Category 1-2 storm conditions, 30% of all residents evacuate out-of-county and 2% travel to a local shelter. The percentage of those traveling to local residences varies, depending on place of origin, from 58%-67%. Under a Category 3 storm scenario, 30% of all residents evacuate out-of-county and 5% travel to a local shelter. With a slight increase in those traveling to a local shelter, the percent residents traveling to a local residence slightly decreases to a range of 55% to 64%, depending on place of origin. Under a Category 1-2 and a Category 3 storm conditions, 10% of evacuees from County Evacuation Zone A travel to a hotel, 5% of evacuees from County Evacuation Zone B travel to hotels and 1% from inland areas seek refuge in hotels. Under Category 4-5 storm conditions, 35% of permanent occupied unit evacuees travel out-of-county, 10% travel to local shelters, 45-50% travel to a local residence and between 5-10%, depending on place of origin, travel to hotels/motels.

The assumptions informing this data are that 1) the majority of evacuees stay close to home or stay in-county and travel to the home of a friend or relative following the "shelter in place" philosophy; 2) areas closest to evacuation zones directed to evacuate will have the highest percentages of shadow evacuation; 3) shadow evacuation rates range between 5% and 10% based on the average shadow evacuation of 8% demonstrated by the Hurricane Floyd, Hurricane Frances and Hurricane Jeanne behavioral studies; and 4) public shelter use is equal to or less than 10%.

Table 24: Broward County Mobile Home Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Mobile Home Unit Destination Choices			
Out-of-County	30%	30%	35%
To Local Shelter	5%	8%	10%
To Local Residence	64%	61%	54%
To Hotel/Motel	1%	1%	1%

Sources: Hurricane Jeanne FEMA Post-storm Assessment; Hurricane Frances FEMA Post-storm Assessment; F-DEM Hurricane Floyd Behavioral Study; Hurricane Floyd Evacuation Measured by the FIU/Florida Poll, Dr. Hugh Gladwin, Florida International University International Hurricane Center and Institute for Public Opinion Research, 1999; 10 Years After Hurricane Andrew, Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002.

Summary: Table 24 indicates the destinations to which Broward County mobile home unit residents journey to during a hurricane evacuation. Destination choice is an important component of hurricane evacuation traffic modeling. It indicates where trips originating from specific areas within a county are traveling to. This data is entered into the FDOT-District IV's traffic model to enable the traffic model to chart how evacuation trips travel across the region's roadways. This information also informs calculations of total public shelter demand and local hotel demand.

Under Category 1-2 (Scenario 1) conditions, 30% of mobile home unit residents travel out of Broward County, 5% travel to a local shelter, 64% travel to a local residence and 1% travel to a local hotel/motel. Under Category 3 (Scenario 2) conditions, 30% of mobile home unit residents travel out of Broward County, 8% travel to a local shelter, 61% travel to a local residence and 1% travel to a local hotel/motel. Under a Category 4-5 (Scenario 3) conditions 35% of mobile home unit residents travel out of Broward County, 10% travel to a local shelter, 54% travel to a local residence and 1% travel to a local hotel/motel.

Shelter usage by mobile home unit residents increases with storm intensity. The above-listed behavioral studies do not differentiate between evacuees from mobile homes and permanent units in terms of destination choices, except to note that mobile home residents are more likely to use public shelters. These studies establish that the majority of evacuees stay close to home or stay in-county and travel to the home of a friend or relative following the "shelter in place"

philosophy of Broward County. Therefore, the mobile home destination choice assignments listed in Table 24 parallel those of permanent occupied unit residents shown in Table 23, except for the fact that a greater percentage of mobile home residents are expected to travel to and are assigned to public shelters.

Table 25: Broward County Tourist Unit Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit Destination Choices			
Out-of-County			
County Evacuation Zone A	74%	79%	88%
County Evacuation Zone B	74%	79%	88%
Inland Areas	99%	99%	98%
To Local Shelter			
County Evacuation Zone A	1%	1%	2%
County Evacuation Zone B	1%	1%	2%
Inland Areas	1%	1%	2%
To Inland Hotels			
County Evacuation Zone A	25%	20%	10%
County Evacuation Zone B	25%	20%	10%
Inland Areas	0%	0%	0%

Source: Broward County Technical Advisory Team

Summary: Table 25 portrays the destinations to which Broward County tourists evacuate. Because traditional behavioral studies do not analyze the specifics of tourist evacuation behavior, the SFRPC looked toward the Broward County Technical Advisory Team, with its expert local knowledge, to guide these trip assignments. The Broward County Technical Advisory Team informed the SFRPC that tourists from County Evacuation Areas often travel to sister hotels inland, especially under Category 1-3 storm conditions. Hotels in Evacuation Areas often have or make arrangements with their inland counterparts to house a portion of their evacuating hotel guests.

Table 26: Broward County Permanent Occupied Unit/Mobile Home Unit Out-of-County Destination Choices

2006 South Florida Regional Hurricane Evacuation Traffic Study			
Broward County	**Category 1-2**	**Category 3**	**Category 4-5**
Permanent Occupied Unit/Mobile Home Unit Out-of-County Destination Choices			
Out-of-Region	60%		
To Miami Dade County Residence	35%		
To Miami Dade County Hotel	5%		

Sources: "10 Years After Hurricane Andrew", Dr. Hugh Gladwin, Florida International University Institute for Public Opinion Research, 2002; Broward County Technical Advisory Team

Summary: Table 26 presents the out-of-county destinations to which Broward County permanent occupied unit and mobile home residents evacuate. This table charts the trips traveling out of the South Florida region and the trips traveling from Broward County to Miami-Dade County within the region. Under all storm conditions, 60% of out-of-county evacuees journey out-of-region, while 35% travel to a Miami-Dade County residence. The remaining 5% travel to a Miami-Dade County hotel. The "10 Years After Hurricane Andrew" study by the FIU Institute for Public Opinion Research, 2002, substantiates that people travel between South Florida counties in an evacuation. It captures the number of respondents that traveled to other South Florida counties during Hurricane Andrew and indicates that, on average, about 14% of all evacuees from Broward and Miami-Dade Counties traveled to another County within the South Florida. Because behavioral studies demonstrate that the plurality of evacuees travel to the home of a friend or relative, the majority of out-of-county trips to Miami-Dade County were assigned to a Miami-Dade County Residence. More Broward County residents evacuate out-of-region than Miami-Dade County residents because of Broward's more northern location.

Shelter Information

The 2006 South Florida Regional Hurricane Evacuation Model includes information, by county, on primary shelter locations and capacities. **Appendix 3** lists each county's primary shelters and shelter capacities. **Map 1** depicts the shelter locations in Broward County. **Map 2** shows Miami-Dade County shelter locations. **Map 3** depicts Monroe County shelter locations. This data is included to provide an understanding of where shelters are located and how much capacity is available in relation to the public shelter demand calculated by the model. This information also helped to guide FDOT - District IV's traffic modeling, by indicating the locations of the shelters to which evacuees were traveling.

Traffic Network Information

Roadway characteristics such as posted speed and number of lanes affect roadway capacities, and, in turn, vehicle flow rates, on a transportation network. This data is important in hurricane evacuation modeling in order to calculate accurate clearance times.

The transportation network characteristics used for the 2006 South Florida Regional Hurricane Evacuation Traffic Study were developed from the Southeast Florida Regional Planning Model (SERPM-6) network, which covers Miami-Dade, Broward, and Palm Beach Counties. The SERPM-6 network was designed in conjunction with the TAZ structure of each county. To capture Monroe County evacuation traffic, the SERPM-6 highway network was extended by adding US 1 to Key West. The US 1 SERPM-6 extension was programmed with the same roadway capacities as documented in the Miller Model.

Table 27 lists the specific roadway capacities for the critical links used to determine clearance times in the 2006 South Florida Regional Hurricane Evacuation Traffic Study.

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Table 27 : Baseline Scenario Critical Link Roadway Capacities*	
Critical Links	**Capacity**
Regional Routes out of South Florida	
I-95 northbound out of Region	6,330
Florida Turnpike northbound out of Region	4,100
US 27 northbound out of Region	1,740
I-75 west/northbound out of Region	4,100
US 41 westbound out of Region	656
Monroe County Critical Links	
Snake Creek Bridge	1,350
US 1 18-mile stretch out of the Florida Keys	1,500
Northbound Card Sound Road before Ocean Reef	600
Miami-Dade County Critical Links	
US 1 through Florida City	1,800
Northbound ramp from US 1 to the HEFT	1,800
Krome Avenue link through downtown Homestead	720
HEFT link north of SW 312 Street interchange	3,980
Krome Avenue link north of Quail Roost Drive	720
HEFT link north of SW 137th Avenue interchange	3,980
HEFT link north of SW 112th Avenue interchange	4,100
HEFT link north of Coral Reef Road interchange	6,270
HEFT link south of US 27 interchange	4,100
McArthur Causeway	2,610
Venetian Causeway	1,653
Julia Tuttle Causeway	6,270
Kennedy Causeway	2,730
Broad Causeway (96th Street)	1,350
Sunny Isles Causeway	3,520
Lehman Causeway	5,550
Broward County Critical Links	
Hallandale Beach Blvd bridge over the Intracoastal	1,820
Hollywood Blvd bridge over the Intracoastal	1,500
Sunrise Blvd bridge over the Intracoastal	2,275
Oakland Park Blvd bridge over the Intracoastal	1,517
NE 14th Street Bridge over the Intracoastal	1,820
Hillsboro bridge over the Intracoastal	1,330
Altantic Blvd bridge over the Intracoastal	1,820
SE 17th Street bridge over the Intracoastal	1,517
East Commercial Blvd bridge over the Intracoastal	1,083
Sheridan Street bridge over the Intracoastal	1,800
Dania Beach Blvd bridge over the Intracoastal	1,450
Las Olas bridge over the Intracoastal	1,517

***Roadway capacity** is the maximum number of vehicles that a uniform section of lane or roadway can reasonably be expected to carry during a given time period under prevailing roadway, traffic and control conditions. It can be described as the maximum hourly vehicle flow rate over a uniform section of road. Roadway capacity is measured in vehicles per hour per lane. The roadway capacities used in the 2006 South Florida Regional Hurricane Evacuation Traffic Study for Broward and Miami-Dade County are from the Southeast Florida Regional Planning Model (SERPM-6) network, while Monroe County roadway capacities are from the Miller Model.

Traffic Study Geography

The Traffic Study's traffic modeling and user model each generate their final results by combining data inputs in a model-specific operating environment based on unique geography.

Each modeling environment is based on five units of geography (from largest to smallest):

1) South Florida Region
2) County boundaries
3) County-defined Hurricane Evacuation Zones
4) Model evacuation zones
5) Traffic analysis zones or census block groups

Traffic Model Geography

The traffic model builds upwards from the smallest units of geography at which base data is collected: Traffic Analysis Zones (TAZ) and Census Block Groups (CBG). The housing unit, population and behavioral data used to create current conditions in the traffic model (and, later to update the user model) had to be collected and organized at a small scale within each county. A small scale of analysis was needed to ensure that the data collected would represent variations in housing units and population across each county. The unit of analysis also needed to be compatible with FDOT - District IV's traffic modeling software, the SERPM-6 platform.

The SERPM-6 platform is designed to utilize Traffic Analysis Zone level data to model trip generation and trip assignments – how vehicles are produced by a given area and how those vehicles move across the transportation network. FDOT - District IV obtains this data from the Miami-Dade and Broward County Metropolitan Planning Organizations to conduct its transportation modeling. This TAZ data also contains the housing and population information needed for the regional model update and is a suitable small unit of analysis. With Technical Advisory Team validation, it was decided that all housing and population data would be collected at the TAZ level in Miami-Dade and Broward Counties.

Because Monroe County is not part of a Metropolitan Area, it is not part of the jurisdiction of a Metropolitan Planning Organization and is not currently divided into traffic analysis zones. Therefore, with Monroe County Technical Advisory Team partners, census block groups were chosen as an alternative base unit of analysis.

Combining this base data with policy-based behavioral assumptions, SFRPC staff generated total evacuating vehicles and people by origin and destination for FDOT-District IV's traffic model.

FDOT - District IV used the numbers of evacuating vehicles by origin and evacuating vehicles by destination by TAZ and by CBG to complete the traffic modeling for the baseline model design. This finer level of data enabled FDOT to use their SERPM-6 modeling platform to determine, at a finer level of assessment, the traffic loading factors and trip assignments/traffic volumes necessary to generate the baseline scenario outcomes and to build the framework for the user model. FDOT took the small scale data and used it to run their traffic modeling at a regional level to calculate how vehicles move across the regional transportation network and among the three counties.

User Model Geography

The user model builds up to a regional level of analysis from a larger unit of geography – model evacuation zones. Because there are hundreds of TAZs and census block groups, it would be very cumbersome to use these base data units to design a user model that allows user to evaluate alternative hurricane evacuation scenarios. As a result, the housing and population data collected at the traffic analysis zone and census block group level for the baseline model was aggregated into larger model evacuation zones within each county for the user model. These model-defined zones are made up of several TAZs or CBGs. They are small enough to account for the variation in housing and population characteristics across each county, but large enough to ensure a more practical and accommodating format for the design and operation of the user model. Broward County has 42 model evacuation zones (**see Map 4**). Miami-Dade County has 53 model evacuation zones (**see Map 5**). Monroe County has 6 model evacuation zones based on its five hurricane evacuation zones (**see Map 6**). For a more detailed description of Monroe County's evacuation zones see **Appendix 1**.

The user model calculates its final results – clearance times for selected critical links, total evacuating vehicles and people, public shelter demand – at the regional level. However these final calculations are built on calculations at the model evacuation zone level. At the model evacuation zone level, the behavioral, housing and population data are tabulated, organized, modified and combined to generate the values for total evacuating people and evacuating vehicles by origin and destination. This information is then used to complete the user model's traffic analysis, which assigns the total out-of-county evacuating vehicles to regional roadways based on the traffic loading factors generated by the baseline model.

Hurricane Evacuation Zone Geography

The baseline and user model environments are both informed by officially designated hurricane evacuation zones at the county level. Each county is divided into hurricane evacuation zones, officially defined by county emergency management officials. In the model, these boundaries are used to define the county areas which will come under directed evacuation orders and which are most susceptible to storm surge. These evacuations zones create a tiered structure of at-risk model evacuation zones so as to guide model calculations of the magnitude of evacuating people and vehicles under specific storm scenarios. **Table 6** lists the model evacuation zones which fall within each county evacuation zone. Broward County has two evacuation zones: Area A and Area B (**see Map 4**). Area A is the area east of the Intracoastal Waterway, including the barrier islands. Area B extends from US 1 to the Intracoastal Waterway. Miami-Dade County has three evacuation zones: A, B and C (**see Map 5**). Because of the unique situation of the Florida Keys and their high susceptibility to storm surge, Monroe County is broken down into five evacuation zones to facilitate the mandatory staged evacuation of all residents for Category 3 or higher storms (**see Map 6**). For modeling purposes, these five evacuation zones are grouped into a model-defined Evacuation Zone A. In the baseline and user models, Monroe County also has an Evacuation Zone B, which includes the mainland areas of Monroe County outside the five evacuation zones.

Table 28: Model Evacuation Zones to County Evacuation Zones

County	Model Evacuation Zones Included
Broward County	
Evacuation Zone A	1-9
Evacuation Zone B	10-18
Inland	19-42
Miami-Dade County	
Evacuation Zone A	1-10
Evacuation Zone B	11-21
Evacuation Zone C	22-26
Inland	27-53
Monroe County	
Evacuation Zone A	1-5
Evacuation Zone B	6

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Space reserved for Map 6

SECTION 3: TRAFFIC STUDY OUTCOMES

Baseline Scenarios

The baseline scenario outcomes include traffic congestion maps that represent the traffic model simulations, clearance times by critical link, total evacuating vehicles and people, public shelter demand and hotel room demand.

Because of its ability to model traffic flows across the entire regional network and analyze complex traffic conditions, the traffic model was used to create and analyze the current regional hurricane evacuation traffic conditions for the six baseline scenarios. The traffic model generated the traffic congestion maps, trip assignments for the critical links and traffic loading factors for the regional roadways used to inform the user model.

The user model incorporates these traffic model results into its simplified traffic modeling operations. This enables the user model to generate total evacuating vehicles by critical link and clearance times for the baseline scenarios and to test any future alternative scenarios.

Baseline Evacuating Vehicles

Table 29 summarizes total evacuating vehicles by origin by County and by the South Florida Region for each of the six baseline scenarios. It is evident that both tourist occupancy rates and storm severity impact the number of evacuating vehicles. A higher tourist occupancy rate, under the same storm severity, generates more evacuating vehicles than a lower tourist occupancy rate. For example, 38,843 vehicles evacuate Monroe County under Scenario 1A (Category 1-2 storm conditions with a low tourist occupancy rate). However, under the same storm conditions, but with higher tourist occupancy rates, 44,600 vehicles evacuate Monroe County. In this situation, the increase in tourist occupancy rate generates an additional 5,757 vehicles. The more severe the storm conditions, given the same tourist occupancy rate, the more evacuating vehicles there are. This reflects the fact that as storm severity increases more people are directed to evacuate by emergency management officials as well as the fact that under more intense storm threats more people choose to evacuate.

Table 29: Baseline Scenario Outcomes Summary of Total Evacuating Vehicles by County and by the South Florida Region by Baseline Scenario						
County/Region of Origin	Evacuating Vehicles in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	38,843	44,600	53,256	59,012	53,256	59,012
Miami-Dade County	163,844	180,088	225,743	243,186	302,998	321,185
Broward County	110,604	111,521	158,494	164,743	193,189	199,727
South Florida	313,291	336,209	437,493	466,941	549,443	579,924

Baseline Scenario Definitions:

1A Category 1-2 Storm Condtions with Low Tourist Occupancy
1B Category 1-2 Storm Condtions with High Tourist Occupancy
2A Category 3 Storm Condtions with Low Tourist Occupancy
2B Category 3 Storm Condtions with High Tourist Occupancy
3A Category 4-5 Storm Condtions with Low Tourist Occupancy
3B Category 4-5 Storm Condtions with High Tourist Occupancy

Table 30 represents total evacuating vehicles by destination for the six baseline scenarios. The largest numbers of evacuees are traveling to Broward County and Miami-Dade County local destinations. Vehicles traveling north out of region are also significant under all storm conditions. This destination receives the third highest flow of evacuees.

Table 30: Baseline Scenario Outcomes Summary of Total Evacuating Vehicles by Baseline Scenario to Evacuee Destinations						
All Evacuee Destinations	Evacuating Vehicles in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County Shelter	1,683	1,740	0	0	0	0
Monroe County Hotel	0	0	0	0	0	0
Monroe County Local Friend/Relative	6,473	6,473	0	0	0	0
Miami-Dade County Shelter	3,685	3,849	11,159	11,334	28,689	29,058
Miami-Dade County Hotel	18,217	21,186	23,659	26,471	28,256	29,978
Miami-Dade County Local Friend/Relative	109,660	110,515	153,690	156,469	178,002	180,984
Broward County Shelter	2,637	2,694	7,624	7,687	17,341	17,471
Broward County Hotel	11,490	13,305	15,396	17,146	19,035	20,510
Broward County Local Friend/Relative	88,150	95,033	125,834	133,456	146,016	154,389
North Out of Region	57,715	65,980	81,234	92,805	106,814	119,330
West Out of Region	13,581	15,434	18,897	21,573	25,290	28,204

These numbers align with several destination choice behavioral assumptions input into the model: that the majority of evacuees in Miami-Dade and Broward County stay close to home and

travel to the home of a friend or relative following the "shelter in place" philosophy and that Miami-Dade and Broward County absorb flows of evacuees from the Florida Keys.

The numbers presented in Tables 29 and 30 represent the information that was calculated using base data and given to FDOT - District IV for their traffic modeling. The user model also reflects these for the baseline scenarios.

Baseline Public Shelter and Hotel Room Demand

Tables 31-35 summarize the total evacuating people generated by each of the six baseline scenarios and provide context for these numbers. Table 31 depicts total evacuating people by county and for the South Florida Region (by origin) for each of the six baseline scenarios. There is a significant increase in total number of evacuating people in the South Florida Region from Category 1-2 storm conditions to Category 3 and higher storm conditions. For example, total South Florida evacuating persons under Category 1-2 storm conditions with high tourist occupancy is 696,901. However, this figure increases by 274,146 people to 971,047 total evacuating persons under Category 3 storm conditions, high tourist occupancy.

Table 31: Baseline Scenario Outcomes
Summary of Total Evacuating People by County and by the South Florida Region by Baseline Scenario

County/Region of Origin	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	74,671	90,373	100,726	116,428	100,726	116,428
Miami-Dade County	356,217	378,805	510,188	534,442	729,110	754,390
Broward County	219,402	227,723	312,270	320,177	391,293	400,640
South Florida	650,290	696,901	923,184	971,047	1,221,129	1,271,458

Baseline Scenario Definitions:

1A Category 1-2 Storm Condtions with Low Tourist Occupancy
1B Category 1-2 Storm Condtions with High Tourist Occupancy
2A Category 3 Storm Condtions with Low Tourist Occupancy
2B Category 3 Storm Condtions with High Tourist Occupancy
3A Category 4-5 Storm Condtions with Low Tourist Occupancy
3B Category 4-5 Storm Condtions with High Tourist Occupancy

Table 32 outlines the public shelter demand created under each baseline scenario. It lists how many evacuating people will travel to shelters in each of the respective counties. Under all scenarios, the greatest demand for public shelter space is in Miami-Dade County. Under Category 4-5 storm conditions, high tourist occupancy, 71,358 people are modeled traveling to Miami-Dade County public shelters. Public shelter space demand in Monroe County is nonexistent under Category 3 or high storm conditions because Monroe County does not officially open its shelters for Category 3 or higher storms. The zeros represent the fact that all Keys residents are directed to evacuate and shelter out of county. In the worst case baseline scenario, 3B, public shelter demand does not exceed the maximum shelter space available in Broward and Miami-Dade Counties as specified in the 2006 Statewide Emergency Shelter Plan **(Table 33**).

Table 32: Baseline Scenario Outcomes Total Public Shelter Demand (in People) by Baseline Scenario						
County/Region of Origin	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	3,027	3,184	0	0	0	0
Miami-Dade County	8,355	8,584	26,081	26,329	70,850	71,358
Broward County	5,538	5,621	15,731	15,820	36,304	36,493
Total	16,920	17,389	41,812	42,149	107,154	107,851

Table 33: Year 2006 Category 5 Total Shelter Capacity (in People)	
Broward County	37,135
Miami-Dade County	86,511
Monroe County	N/A

Table 34 encapsulates the demand for hotel rooms created by each baseline scenario. It shows the numbers of evacuating people to hotels in each of the counties. Under all scenarios, the greatest demand for hotel space is in Miami-Dade County. There is not a demand for hotel rooms in Monroe County because all tourists are directed to evacuate out of county under all storm conditions and hotels close to ensure worker safety. Table 35 presents the total hotel rooms present in each county according to the best available data collected for the Traffic Study. Adequate hotel rooms exist in each county to absorb the arriving evacuees.

Table 34: Baseline Scenario Outcomes Total Hotel Room Demand (in People) by Baseline Scenario						
County/Region of Origin	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	0	0	0	0	0	0
Miami-Dade County	34,060	38,926	46,325	50,633	60,931	63,721
Broward County	20,766	23,699	28,956	30,785	39,169	41,620
Total	54,826	62,625	75,281	81,418	100,100	105,341

Table 35: Total Hotel Capacity (in Rooms)	
Broward County	34,615
Miami-Dade County	49,468
Monroe County	13,086

Baseline Traffic Maps

A map of the regional roadway system showing the traffic congestion and traffic conditions created under each baseline scenario was generated using the traffic model results. An additional map inset for South Miami-Dade was also generated for each scenario. These maps enable an understanding of how traffic congestion patterns change across the baseline scenarios by coding all roadways in the region according to their clearance times. The total roadways coded with 12-24 hour and more than 24 hour clearance times is greatest under the 3B scenario. High tourist occupancy and high storm severity combine to create high traffic flows on US 1 out of the Florida Keys and through Florida City, on Card Sound Road and on the Florida Turnpike.

TRAFFIC MAP 1A

TRAFFIC MAP 1A SOUTH MIAMI-DADE INSET

TRAFFIC MAP 1B

TRAFFIC MAP 1B SOUTH MIAMI-DADE INSET

TRAFFIC MAP 2A

TRAFFIC MAP 2A SOUTH MIAMI-DADE INSET

TRAFFIC MAP 2B

TRAFFIC MAP 2B SOUTH MIAMI-DADE INSET

TRAFFIC MAP 3A

TRAFFIC MAP 3A SOUTH MIAMI-DADE INSET

TRAFFIC MAP 3B

TRAFFIC MAP 3B SOUTH MIAMI-DADE INSET

Table 36: Baseline Scenario Outcomes Clearance Times*						
Modeled Critical Roadway Link	**1A**	**1B**	**2A**	**2B**	**3A**	**3B**
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.8**	**6.3**	**7.3**	**8.1**	**9.0**	**9.9**
Florida Turnpike northbound out of Region	**11.7**	**13.2**	**15.7**	**17.7**	**20.0**	**22.1**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.2**	**5.5**	**6.4**	**7.0**	**7.9**	**8.5**
US 41 westbound out of Region	**5.6**	**6.4**	**7.1**	**8.0**	**8.8**	**9.7**
Monroe County Critical Links						
Snake Creek Bridge	**19.4**	**22.7**	**32.3**	**35.7**	**32.3**	**35.7**
US 1 18-mile stretch out of the Florida Keys	**18.2**	**21.2**	**30.0**	**33.0**	**30.0**	**33.0**
Northbound Card Sound Road before Ocean Reef	**19.3**	**22.5**	**32.0**	**35.3**	**32.0**	**35.3**
Miami-Dade County Critical Links						
US 1 through Florida City	**10.2**	**14.6**	**19.2**	**26.9**	**24.4**	**28.4**
Northbound ramp from US 1 to the HEFT	**9.0**	**10.3**	**15.3**	**20.0**	**20.7**	**23.9**
Krome Avenue link through downtown Homestead	**5.8**	**6.9**	**8.4**	**6.3**	**6.7**	**9.5**
HEFT link north of the SW 312 Street interchange	**5.3**	**5.9**	**8.6**	**10.9**	**11.9**	**13.5**
Krome Avenue link north of Quail Roost Drive	**4.4**	**7.1**	**10.5**	**13.2**	**8.0**	**9.7**
HEFT link north of the SW 137th Avenue interchange	**5.4**	**6.0**	**8.9**	**11.2**	**12.9**	**14.6**
HEFT link north of the SW 112th Avenue interchange	**5.1**	**5.9**	**8.9**	**11.2**	**13.5**	**14.7**
HEFT link north of Coral Reef Road interchange	**5.1**	**5.1**	**7.3**	**9.2**	**13.6**	**14.8**
HEFT link south of US 27 interchange	**4.5**	**5.2**	**7.0**	**8.8**	**11.5**	**13.0**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

*The **clearance times** shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Table 36 presents the clearance times for all critical links analyzed under the six baseline hurricane evacuation scenarios. This table presents a system wide view of clearance times. However, under each baseline scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Table 37: Baseline Scenario 3B Clearance Times	
Regional Roadways	
I-95	9.9
Florida's Turnpike	22.1
US 27	3.4
I-75	8.5
US 41	9.7
Monroe County	35.7
Miami-Dade County	28.4
Broward County	6.2

Table 37 presents each county's overall clearance times and the regional roadway clearance times under the worst case scenario modeled, scenario 3B. Scenario 3B is designed to represent the simultaneous directed evacuation of all three counties under Category 4-5 storm conditions. It reflects an evacuation shaped by each county's current hurricane evacuation policies with a 100% participation rate for all Monroe County unit types and a 100% participation rate for all unit types in Broward County Evacuation Zones A and B and Miami-Dade Evacuation Zones A, B and C. Under Category 4-5 storm conditions, emergency management officials would direct these areas to evacuate. The 3B scenario also assumes a simultaneous evacuation of all unit types in Monroe County.

The information presented in Table 37 on the highest clearance times under a worst case scenario is informative for certain policy discussions.

Results Specific to Monroe County

Because of the unique significance of clearances times to Monroe County, a greater range of evacuation scenarios were assessed to provide information on how its clearance time is affected by its phased evacuation policy and changes to its policy-based participation rates.

Table 38 depicts the county clearance times calculated for Monroe County under baseline conditions, phased evacuation conditions and phased evacuation conditions that include Miller Model participation rates. As calculated in the South Florida Regional Hurricane Evacuation Traffic Study, the 2005 baseline clearance time for Monroe County is 35.7 hours.

2006 South Florida Regional Hurricane Evacuation Traffic Study Results

Table 38: Monroe County Clearance Times

Evacuation Scenario	Assumptions	Clearance Time (Hours)
2005 Baseline	• Simultaneous evacuation of tourists, mobile home residents and permanent residents • 100% evacuation participation rate for all unit types	35.7 hours
2005 Baseline incorporating Phased Evacuation of Tourists and Mobile Home Residents	• Only the effect of permanent resident evacuation on clearance time is measured. Tourists and mobile home residents are taken out of the evacuation in accordance with Monroe County's adopted phased evacuation plan. • 100% evacuation participation rate for permanent residents	23.6 hours
Monroe County Phased Evacuation with Miller Model Participation Rates	• Only permanent resident evacuation is measured • 75% evacuation participation rate, as presented in the Miller Model, for permanent residents	18.2 hours

Table 39, showcased on the next page, presents the range of Monroe County clearance times as presented in the Miller Model. The Table allows for a comparison between Regional Model and Miller Model clearance times. The Miller Model and the Regional Model, assuming phased evacuation conditions and the same evacuation participation rate (75%), both result in an

approximately 18 hour clearance time for Monroe County. Without assuming the phased evacuation, the Miller Model baseline clearance time is 24.04 hours and the South Florida Regional Hurricane Evacuation Traffic Study clearance time is 35.7 hours.

Miller Model Results

Table 39: Miller Model Clearance Times	
Evacuation Scenario	**Clearance Time (Hours)[8]**
2005 Baseline	24.04
Phased Evacuation of Tourists Only	20.34
Phased Evacuation of Tourists and Mobile Homes	18.10

[8]Clearance time in the Miller Model is defined as the time it takes all evacuating vehicles to clear the Monroe County line after the first evacuation notice is issued.

SECTION 4: RECOMMENDED NEXT STEPS

The 2006 South Florida Regional Hurricane Evacuation Traffic Study is a window into the future needs of hurricane evacuation modeling and planning specific to South Florida. It identifies areas where additional data, policy discussions and enhanced model features would be helpful.

Florida Keys Permanent Unit to Seasonal Unit Conversion Effect, Population Trends and Policy Issues

Throughout the model update process, many Monroe County Technical Advisory Team members and interest parties have emphasized the importance of measuring the affects of unit conversion trends in the Keys on the hurricane evacuation model calculations and on hurricane evacuation clearance times. They articulated that a significant proportion of permanent units are transitioning into seasonal units. There was also a substantial amount of discussion on the current nature of population trends occurring in the Keys.

These discussions have shed light on the need for additional information and additional consistent base data collection for the Florida Keys in order to assess and incorporate Florida Keys trends into the Traffic Study's base data. Currently, there are indicators on the housing and population trends occurring in the Keys that show both increasing and decreasing trends. There is a body of current indicators that shows a declining population in the Florida Keys: Census Bureau population estimates, a study done by the Tourist Development Council projecting the expected loss of service industry workers over the next five years and declining public school enrollment. However, there are also indicators that speak to a reverse trend: the University of Florida's Bureau of Economic and Business Research (BEBR) population estimates indicate a rising Monroe County population.

Additionally, a base dataset is not available that tracks and speaks to the magnitude and geographical extent of permanent to seasonal unit conversion over time, including seasonal unit occupancy rates. Interested parties have noted that even if a permanent unit is seasonally occupied, that unit can still be occupied by friends, renters or other family members when the primary owner is not present, so a base dataset, compatible with the model, that can illuminate how, over time, seasonal conversion affects unit occupancy rates during the year is crucial.

Many of the indicators presented to the SFRPC staff, while pointing to specific trends in Monroe County, did not provide data in a format that is compatible with and ready to input into the current Traffic Study geography, census block groups.

In order to better understand what is truly occurring in the Florida Keys over time and to organize data in a format consistent with the user model and traffic study, accurate and consistent unit counts, unit types and unit occupancy status information should be tracked (preferably by census block group) on an annual basis. Additional information on vehicles per unit and people per unit in this dataset would also be informative. Local government access to this data and their data structures (property appraiser data) are most conducive to creating a system to collect the base data needed over time. Monroe County, given its county level purview, is best positioned

to lead and facilitate this data tracking system given the possibility of financial and logistical support from FDCA and SFRPC staff.

The Census Bureau's American Community Survey will also serve as a vital tool in tracking population and housing trends into the future. The ACS will produce data for Monroe County as a whole every year, 3-year moving averages for areas with a population of at least 20,000 (i.e., Key West), and 5-year moving averages for smaller areas down to the census block group level. Census block group data will become available for the first time in 2010. Efforts undertaken by local governments to track annual changes in housing units would support improvements in the accuracy of the Census data, which is based on a sample that is designed on the basis of a list of all housing units. These two datasets could work in concert and strengthen availability of the best possible data on Monroe County population and dwelling units.

It is also evident from feedback from the Technical Advisory Team and interested parties, that this study is part of a much larger set of current issues in the Florida Keys: the provision of affordable housing, public safety, economic sustainability and vitality, the Florida Keys carrying capacity and community character. Therefore, it is crucial that this Study and the user model be conceived of as a policy tool designed to inform and guide policy discussions that should occur in a broader context with state, local and county and regional partners. Additional meetings with stakeholders and the convening of policy groups about these matters and how they relate to hurricane evacuation may be productive in terms of designing creative and enduring policy solutions.

Traffic Study Update Cycle and Coordinated Data Collection

The 2006 South Florida Regional Hurricane Evacuation Traffic Study is an informative policy tool that provides new insight into the dynamics of regional hurricane evacuation and can be used to guide decision-making. Optimal accuracy and relevance can be guaranteed through a regular Traffic Study update process. A cycle of revision ensures that the model can continuously reflect South Florida's rapidly changing context: housing unit profiles and numbers, population growth, and people's behavior in the face of changing attitudes toward hurricanes over time. With future updates, the model design can also be enhanced to capture additional desired capabilities and to maintain a superior modeling environment.

The update process is dependent on three specific data sources that should be readily available for input into the model at the time of update: 1) new base population and dwelling unit data by county, 2) new behavioral research, and 3) changes to the regional highway network. Ideally, model partners would agree to track dwelling unit and population changes at the county level and actively organize this data for future model updates. A well-coordinated set of base data sharing the same vintage for each county and that is current up to the Traffic Study update year would greatly facilitate future model updates. New behavioral research, especially work more specific to South Florida and the destination choices outlined in the 2006 South Florida Regional Hurricane Evacuation Traffic Study, would enhance the model.

Future Hurricane Evacuation Behavioral Studies
The 2006 South Florida Regional Hurricane Evacuation Traffic Study's behavioral data is based on FEMA post-storm behavioral assessments, studies by Florida International University's Institute of Public Opinion Research, the PBS&J model and the Miller Model. Future hurricane evacuation studies specific to the behavior of Monroe, Miami-Dade and Broward residents would enhance the model ability to represent evacuation conditions. The most beneficial future research would be inquiries that analyze the detailed breakout of out-of-county destination choices specified in the Regional Study, especially in regards to South Florida resident and tourist destination choices in adjacent South Florida counties.

Background Traffic
In the context of the model, background traffic is the measure of vehicles using the transportation network for trip purposes other than hurricane evacuation. It is important to account for background traffic because it can impede traffic flow and increase clearance times during an evacuation. The 2006 South Florida Regional Hurricane Evacuation Traffic Study follows the same approach to background traffic as is built into the unpublished PBS&J 2004 regional model. It adds a background traffic factor, specified as a number of hours, to the model clearance times on each critical link.

The development of a methodology by the SFRPC's traffic engineering partner to incorporate a more specific background traffic factor into the traffic model would be beneficial to future traffic analysis. It would add capacity to the model to measure how the timing of the evacuation orders in each county affects the overall regional traffic flow.

Transit Factor
Future model updates will need to address how the use of transit can be factored into regional hurricane evacuation modeling and the calculation of clearance times.

Evacuation Sequencing
The 2006 South Florida Regional Hurricane Evacuation Traffic Study utilizes the methodology built into the 2004 PBS&J unpublished regional model to incorporate the temporal dimension of hurricane evacuation (the response curve). The user model divides total evacuation traffic on regional roadways across four evacuation time quarters that replicate a typical response curve. In addition, the roadway capacity across these four quarters is calibrated to mirror the effects of an average evacuation response curve. The roadway capacity in the first and fourth quarter is assumed to be at its maximum level. However, diminished roadway capacity is assumed in the second and third quarters of the evacuation to account for the bulk of evacuees who leave toward the middle of an evacuation sequence.

A new methodology that could enhance the way in which the model factors in the time differential in evacuation sequencing would be a potential future model enhancement.

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SECTION 5: USER MODEL GUIDE

The user model is designed to analyze the impacts of changes in housing units, land development patterns, population and hurricane evacuation behavior in Monroe, Miami-Dade and Broward Counties. It is calibrated to reflect the six baseline scenario conditions, but allows the user to test alternative scenarios that generate alternative outcomes and to compare those to the baseline scenario results.

It analyzes the origination and movement of evacuation traffic under varying hurricane conditions in the South Florida Region to generate clearance times, traffic volumes on selected critical links, public shelter and hotel room demand and total evacuating vehicles and people. These end results are the tools to inform decision-making.

User Model Structure

The user model is an Excel spreadsheet divided into **16 tabs**. The first **12 tabs** contain the data and formulas for Monroe, Miami-Dade and Broward County specific calculations. The last **4 tabs** summarize the regional hurricane evacuation scenario outcomes. **Figure 2** provides an overview of how these 16 tabs coincide with the model's operational flow.

The User Model is built from the Traffic Study base data and traffic modeling outcomes. The county-level data in the first **12 tabs** is the same as the TAZ and Census Block Group data used for the baseline model, but aggregated into model evacuation zones to create a more practical and efficient modeling environment.

The baseline traffic modeling completed by FDOT - District IV is integrated into the user-model. The traffic loading factors that the user model employs in the BrOutRoute, MDOutRoute and MoOutRoute tabs to calculate the critical regional link volumes and clearance times in the final two model tabs are derived from this modeling. The traffic volumes loading onto the other critical links identified in the user model are also built into the user model based on the traffic modeling.

Eight of the first **12 County** data tabs include columns that the user can modify to create the conditions for his/her test scenario. An example test scenario would be the addition of dwelling units to a particular area in the South Florida Region. User-adjustable data is always indicated in **blue**.

The model is organized to maintain base data and calculations (those numbers already built into the model) while analyzing the changes to model outcomes created through user modifications. The **base data**, best thought of as the control data, is locked into the model and acts as the starting point to which the changes induced by user modifications are compared. This structure acts as a **tracking system** that enables the user to keep the new data separate from the baseline data while analyzing the magnitude of the change produced by the new information.

Figure 2: Model Operation Flow Tied to User Model Tabs

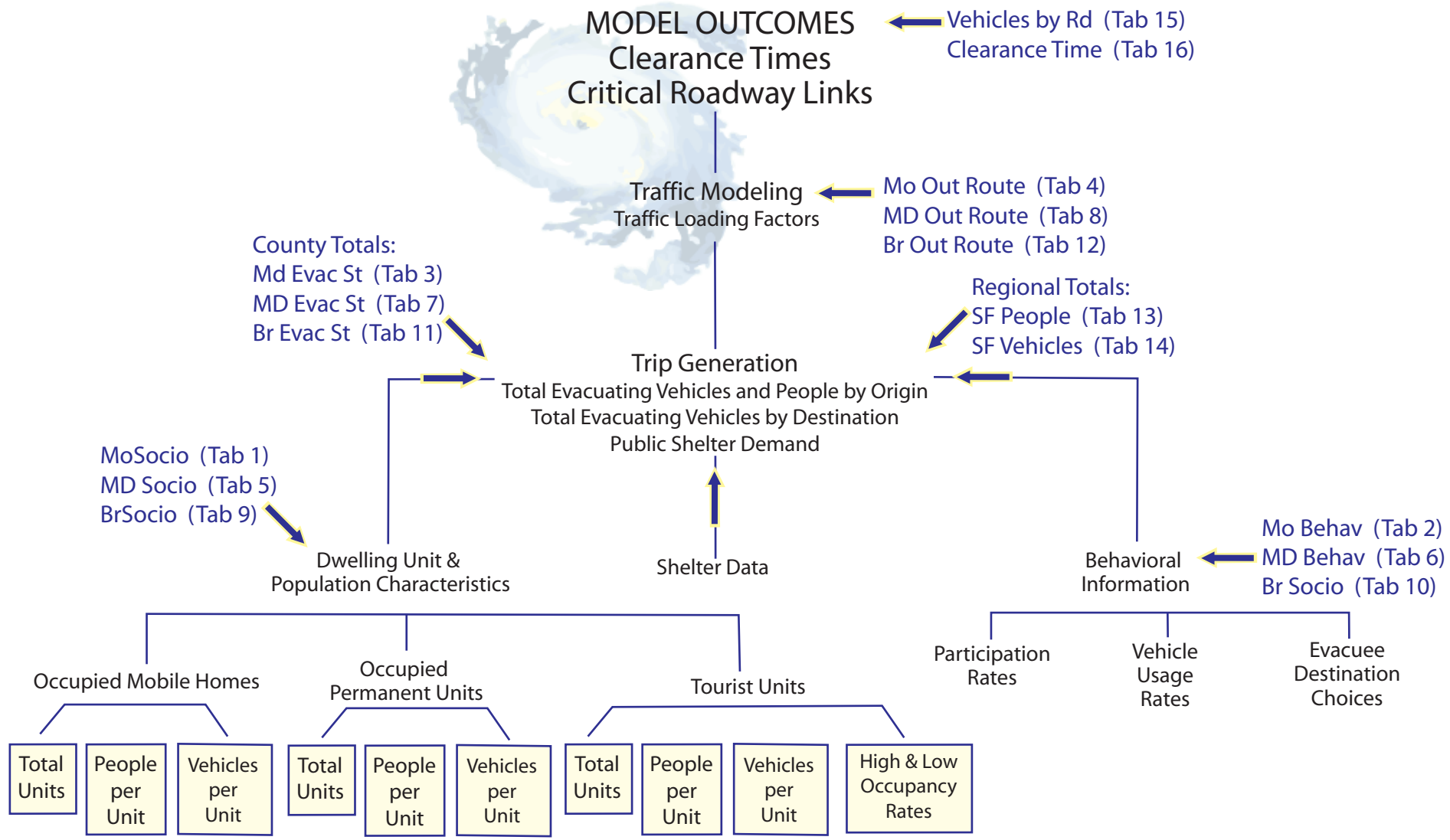

Figure 2 connects the function of the individual tabs of the user model to the flow of data that generates model outcomes. This figure demonstrates how the user tabs function together as part of the overall model operation.

County Data Tab Structure, Organization and Calculations

There are 12 County data tabs. Each County data tab is built on two geographies. It shows the **County specific evacuation zones**, as defined by emergency management personnel, in the rows at the top of the worksheet. In the rows below, are the **model evacuation zones**, which fall within the larger evacuation areas, as indicated by the color scheme. The evacuation area rows at the top of each spreadsheet summarize the data in the model evacuation rows below.

Base year data appears as black text. All **blue** values can be modified by the user.

County Evacuation Zones. These rows also act as data summary fields.

Base-year/non-modifiable data appears in black.

Figure 3: County Data Tab Layout

Miami-Dade County

Socio-Economic Data

Please note: Only numbers in blue are changeable by the user.

Model Evac Zone	Population in Units			Permanent Occupied Units	Change in Permanent Occ. Units	Mobile Home Units	Change in Mobile Home Units	Seasonal Tourist Units	Change in Tourist Units	People Per Unit		
	Permanent Occupied	Mobile Home	Seasonal Tourist							Permanent Unit	Mobile Home Unit	Tourist Unit
Zone A	169,659	56	33,784	70,036	0	20	0	23,140	0	2.42	2.80	1.46
Zone B	169,531	2,462	9,083	60,804	3,000	749	0	6,221	0	2.79	3.29	1.46
Zone C	137,412	6,700	2,083	44,417	0	2,062	0	1,427	0	3.09	3.25	1.46
Inland	1,875,661	28,341	27,273	642,433	0	9,755	0	18,680	0	2.92	2.91	1.46
1	15,730	0	1,428	5,720	0	0	0	978	0	2.75	2.98	1.46
[illegible]	40,320	0	14,717	18,411	0	0	0	10,080	0	2.19	2.98	1.46
[illegible]	1,453	0	9	579	0	0	0	6	0	2.51	2.98	1.46
[illegible]	3,686	0	153	1,638	0	0	0	105	0	2.25	2.98	1.46
[illegible]	17,268	0	8,629	7,048	0	0	0	5,910	0	2.45	2.98	1.46
6	49,770	0	4,148	19,750	0	0	0	2,841	0	2.52	2.98	1.46
7	15,366	0	1,699	6,376	0	0	0	1,164	0	2.41	2.98	1.46
8	16,858	0	1,821	6,995	0	0	0	1,247	0	2.41	2.98	1.46
9	7,209	0	1,181	2,805	0	0	0	809	0	2.57	2.98	1.46
10	1,999	56	0	714	0	20	0	0	0	2.80	2.80	1.46
11	22,321	0	1,203	9,037	0	0	0	824	0	2.47	2.98	1.46
12	24,973	0	0	9,832	0	0	0	0	0	2.54	2.98	1.46
13	11,800	0	74	4,739	0	0	0	51	0	2.49	2.98	1.46
14	17,790	0	486	6,790	0	0	0	333	0	2.62	2.98	1.46
15	12,235	0	1,104	4,817	0	0	0	756	0	2.54	2.98	1.46
16	2,601	0	3,730	967	0	0	0	2,555	0	2.69	2.98	1.46
17	19,644	0	2,118	8,018	0	0	0	1,451	0	2.45	2.98	1.46
18	5,475	0	0	1,766	0	0	0	0	0	3.10	2.98	1.46
19	17,366	0	0	5,808	0	0	0	0	0	2.99	2.98	1.46
20	23,432	976	117	7,943	0	317	0	80	0	2.95	3.08	1.46
21	11,893	1,486	250	1,087	3,000	432	0	171	0	2.91	3.44	1.46
22	14,422	1,401	927	4,956	0	458	0	635	0	2.91	3.06	1.46
23	34,304	4,382	742	10,720	0	1,324	0	508	0	3.20	3.31	1.46

Model Evacuation Zones

Notice how the color coding indicates that Model Evacuation Zones 22 and 23 fall into County Evacuation Zone C

User-modifiable data. This specific column allows the user to add additional permanent occupied units to any model evacuation zone in Miami-Dade County.

The data and calculations for each county are represented in four specific data tabs similar in appearance to Figure 3 shown above. The breakdown is as follows:

Monroe County

MoSocio (Tab 1)
MoBehav (Tab 2)
MoEvacSt (Tab 3)
MoOutRoute (Tab 4)

Miami-Dade County

MDSocio (Tab 5)
MDBehav (Tab 6)
MDEvacSt (Tab 7)
MDOutRoute (Tab 8)

Broward County

BrSocio (Tab 9)
BrBehav (Tab 10)
BrEvacSt (Tab 11)
BrOutRoute (Tab 12)

The tab entitled **Socio** displays the population and dwelling unit data and calculations for each county. The **Behav** tab houses all behavioral assumptions for that county. The **EvacSt** tab summarizes the evacuating vehicles and people generated by combining the county's **Socio** and **Behav** data. The **OutRoute** tab displays the traffic loading factors that indicate how each county's evacuating vehicles traveling out-of-region are distributed onto the regional roadways.

The tab setup for all three counties is the same, but the data and the geography represented in each county tab are specific to that county. For example the BrSocio, MDSocio and MoSocio tabs display the population and housing data specific to each county but share the same overall content and programmed calculations. A complete description of the County tab content is as follows.

Tab 1: MoSocio

Tab 5: MDSocio

Tab 9: BrSocio

Data Displayed

Permanent Occupied Dwelling Units
Seasonal Tourist Units
Mobile Home Units
People per Unit
Vehicles per Unit
Seasonal Tourist Unit Occupancy Rate

Calculations

Permanent Occupied Unit Population
Permanent Occupied Dwelling Units * People/Permanent Occupied Unit

Seasonal Tourist Unit Population
Seasonal Tourist Units * People/Seasonal Tourist Unit

Mobile Home Unit Population
Occupied Mobile Homes * People/Mobile Home

Total Vehicles in Permanent Occupied Units
Permanent Occupied Dwelling Units * Vehicles/Permanent Occupied Unit

Total Vehicles in Seasonal Tourist Units
Seasonal Tourist Units * Vehicles/Seasonal Tourist Unit

Total Vehicles in Mobile Home Units
Occupied Mobile Homes * Vehicles/Mobile Home

Possible User Modifications

- Addition of permanent occupied dwelling units to model evacuation zone(s)
- Addition of mobile home units to model evacuation zone(s)
- Addition of tourist units to model evacuation zone(s)
- Change to people/unit
- Change to vehicles/unit
- Changes to low and high tourist unit occupancy rates

Figure 4: Miami-Dade (MD Socio) Tab Example

The vehicles/unit are shown in these three columns. The user can modify the values by model evacuation zone shown in blue.

The User can modify the low and high tourist occupancy rates by adjusting the blue values in the quick fill boxes above the tourist occupancy columns

						50%	85%
Vehicles Per Unit			Total Vehicles in Units			Tourist Occupancy	
Permanent Unit	Mobile Home Unit	Tourist Unit	Permanent Unit	Mobile Home Unit	Tourist Unit	Low	High
1.51	1.51	1.05	105,754	30	24,296	50%	85%
1.51	1.51	1.05	96,344	1,131	6,534	50%	85%
1.51	1.51	1.05	67,070	3,114	1,498	50%	85%
1.51	1.51	1.05	970,071	14,729	19,615	50%	85%
1.51	1.51	1.05	8,637	0	1,027	50%	85%
1.51	1.51	1.05	27,801	0	10,584	50%	85%
1.51	1.51	1.05	874	0	6	50%	85%
1.51	1.51	1.05	2,413	0	110	50%	85%
1.51	1.51	1.05	10,642	0	6,206	50%	85%
1.51	1.51	1.05	29,823	0	2,983	50%	85%
1.51	1.51	1.05	9,628	0	1,222	50%	85%
1.51	1.51	1.05	10,562	0	1,309	50%	85%
1.51	1.51	1.05	4,236	0	849	50%	85%
1.51	1.51	1.05	1,078	30	0	50%	85%
1.51	1.51	1.05	13,646	0	865	50%	85%
1.51	1.51	1.05	14,846	0	0	50%	85%
1.51	1.51	1.05	7,156	0	54	50%	85%

Total vehicles in each unit type are calculated at the model evacuation zone level and aggregated to the evacuation areas geography indicated by the arrow.

Tab 2: MoBehav

Tab 6: MDBehav

Tab 10: BrBehav

Data Displayed

Participation Rates by Storm Intensity and Unit Type
Vehicle Usage Rates
Permanent Resident Destinations Choices
Mobile Home Resident Destination Choices
Tourist Unit Destination Choices
Permanent Resident Distribution to Out-of-County Destinations
Tourist Distribution to Out-of-County Destinations

Calculations

This tab does not perform any calculations.

User Modifications

- Modifications of any of the behavioral assumptions listed above

Figure 5: Monroe County (MoBehav) Tab Example

Monroe County Behavioral Data

Model Evac Zone	Participation Rates by Storm Intensity and Unit Type								
	Scenario 1 (Category 1-2 Storm)			Scenario 2 (Category 3 Storm)			Scenario 3 (Category 4-5 Storm)		
	Permanent Units	Mobile Home Units	Tourist Units	Permanent Units	Mobile Home Units	Tourist Units	Permanent Units	Mobile Home Units	Tourist Units
Zone A	62%	100%	100%	100%	100%	100%	100%	100%	100%
Zone B	62%	100%	100%	100%	100%	100%	100%	100%	100%
1	62%	100%	100%	100%	100%	100%	100%	100%	100%
2	62%	100%	100%	100%	100%	100%	100%	100%	100%
3	62%	100%	100%	100%	100%	100%	100%	100%	100%
4	62%	100%	100%	100%	100%	100%	100%	100%	100%
5	62%	100%	100%	100%	100%	100%	100%	100%	100%
6	62%	100%	100%	100%	100%	100%	100%	100%	100%
Total	62%	100%	100%	100%	100%	100%	100%	100%	100%

The user can modify any of the behavioral assumptions presented in the behavioral data tab to represent a given evacuation scenario. Modifications are made at the large level of geography shown in the top cells. That value is then automatically carried over to all of the lower cells that make up the smaller model geography.

Tab 3: MoEvacSt

Tab 7: MDEvacSt

Tab 11: BrEvacSt

Data Displayed

The EvacSt tab displays calculated data only – there are no user-changeable values.

Calculations for Each Evacuation Scenario

Total Evacuating People

(Permanent occupied unit population * participation rate) + (Mobile home unit population * participation rate) + (Tourist unit population * tourist unit occupancy rate * participation rate)

Evacuating People to Local Public Shelters (Public Shelter Demand)

(Permanent occupied unit population * participation rate * % to public shelter destination)) + (Mobile home unit population * participation rate * % to public shelter destination) + (Tourist unit population * tourist unit occupancy rate * participation rate * % to public shelter destination)

Evacuating People to Local Hotels/Motels

(Permanent occupied unit population * participation rate * % to local hotel/motel destination)) + (Mobile home unit population * participation rate * % to local hotel/motel destination) + (Tourist unit population * tourist unit occupancy rate * participation rate * % to local hotel/motel destination)

Evacuating People to Local Residences

(Permanent occupied unit population * participation rate * % to local residence destination)) + (Mobile home unit population * participation rate * % to local residence destination) + (Tourist unit population * tourist unit occupancy rate * participation rate * % to local residence destination)

Evacuating People to Out-of-County Destinations

(Permanent occupied unit population * participation rate * % to out-of-county destination)) + (Mobile home unit population * participation rate * % to out-of-county destination) + (Tourist unit population * tourist unit occupancy rate * participation rate * % to out-of-county destination)

Total Evacuating Vehicles

(Total vehicles in permanent occupied units * participation rate * vehicle usage rate) + (Total vehicles in mobile home units * participation rate * vehicle usage rate) + (Total vehicles in tourist units * tourist unit occupancy rate * participation rate * vehicle usage rate)

Evacuating Vehicles to Local Public Shelters

(Total vehicles in permanent occupied units * participation rate * vehicle usage rate * % permanent residents to public shelter destination) + (Total vehicles in mobile home units * participation rate * vehicle usage rate * % mobile home residents to public shelter) + (Total vehicles in tourist units * tourist unit occupancy rate * participation rate * vehicle usage rate * % tourists to public shelter destination)

Evacuating Vehicles to Local Hotels/Motels

(Total vehicles in permanent occupied units * participation rate * vehicle usage rate * % permanent residents to local hotel/motel destination) + (Total vehicles in mobile home units * participation rate * vehicle usage rate * % mobile home residents to local hotel/motel destination) + (Total vehicles in tourist units * tourist unit occupancy rate * participation rate * vehicle usage rate * % tourists to local hotel/motel destination)

Evacuating Vehicles to Local Residences

(Total vehicles in permanent occupied units * participation rate * vehicle usage rate * % permanent residents to local residence destination) + (Total vehicles in mobile home units * participation rate * vehicle usage rate * % mobile home residents to local residence destination) + (Total vehicles in tourist units * tourist unit occupancy rate * participation rate * vehicle usage rate * % tourists to local residence destination)

Evacuating Vehicles to Out-of-County Destinations

(Total vehicles in permanent occupied units * participation rate * vehicle usage rate * % out-of-county destination) + (Total vehicles in mobile home units * participation rate * vehicle usage rate * % out-of-county destination) + (Total vehicles in tourist units * tourist unit occupancy rate * participation rate * vehicle usage rate * % out-of-county destination)

User Modifications

The EvacSt tab displays calculated data only – there are no user-changeable values.

Figure 6: Broward County (BrEvacSt) Tab Example

Broward County
Evacuating People and Vehicle Statistics

Model Evac Zone	Total Evacuating People						Evacuating People to Local Public Shelter					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	67,648	71,867	67,648	71,867	67,648	71,867	1,193	1,237	2,746	2,787	5,489	5,575
Zone B	12,848	13,526	104,101	104,949	104,101	104,949	238	244	5,084	5,093	10,153	10,172
Inland	138,904	142,327	140,520	144,372	219,543	223,825	4,107	4,140	7,901	7,940	20,662	20,746
1	6,083	6,202	6,083	6,202	6,083	6,202	117	118	286	287	572	575
2	11,866	12,751	11,866	12,751	11,866	12,751	204	213	460	468	919	937
3	895	995	895	995	895	995	14	15	30	31	59	61
4	11,879	13,527	11,879	13,527	11,879	13,527	175	192	345	361	690	723
5	3,939	4,125	3,939	4,125	3,939	4,125	72	74	169	171	338	342
6	14,528	15,070	14,528	15,070	14,528	15,070	270	276	645	650	1,289	1,300
7	12,478	12,910	12,478	12,910	12,478	12,910	233	238	559	563	1,117	1,126
8	2,611	2,679	2,611	2,679	2,611	2,679	50	50	120	121	240	242
9	3,369	3,608	3,369	3,608	3,369	3,608	58	61	132	135	265	269
10	714	714	7,143	7,143	7,143	7,143	14	14	357	357	714	714
11	1,011	1,011	10,110	10,110	10,110	10,110	20	20	506	506	1,011	1,011
12	938	938	9,377	9,377	9,377	9,377	19	19	469	469	938	938
13	1,017	1,017	10,171	10,171	10,171	10,171	20	20	509	509	1,017	1,017
14	1,664	1,805	11,994	12,169	11,994	12,169	28	29	573	575	1,146	1,150
15			17,570	17,990	17,570	17,990	45	48	815	819	1,630	1,639
16			7,633	7,673	7,633	7,673	27	27	382	383	751	752
17			15,674	15,798	15,674	15,798	34	35	765	766	1,530	1,533
18			14,429	14,518	14,429	14,518	31	32	708	709	1,416	1,418
19			2,889	2,940	3,521	3,578	118	119	199	200		

Calculation of total evacuating people

Calculation of evacuating people to local public shelters

Tab 4: MoOutRoute

Tab 8: MDOutRoute

Tab 12: BrOutRoute

Data Displayed

Percent of Northbound Out-of-Region Vehicles Exiting via I-95 (Regional Roadway Loading Factors)

Percent of Northbound Out-of-Region Vehicles Exiting via Florida's Turnpike (Regional Roadway Loading Factors)

Percent of Northbound Out-of-Region Vehicles Exiting via US 27 (Regional Roadway Loading Factors)

Percent of Westbound Out-of-Region Vehicles Exiting via I-75 (Regional Roadway Loading Factors)

Percent of Westbound Out-of-Region Vehicles Exiting via US 41 (Regional Roadway Loading Factors)

Calculations

Out of Region Vehicles Using I-95 by Model Evacuation Zone of Origin

Evacuating Vehicles to Out-of-County Destination * % of evacuating vehicles going north out-of- region * % out-of-region vehicles exiting via I-95

Out of Region Vehicles Using Florida's Turnpike by Model Evacuation Zone of Origin

Evacuating Vehicles to Out-of-County Destination * % of evacuating vehicles going north out-of-region * % out-of-region vehicles exiting via Florida's Turnpike

Out of Region Vehicles Using US 27 by Model Evacuation Zone of Origin

Evacuating Vehicles to Out-of-County Destination * % of evacuating vehicles going north out-of-region * % out-of-region vehicles exiting via US 27

Out of Region Vehicles Using I-75 by Model Evacuation Zone of Origin

Evacuating Vehicles to Out-of-County Destination * % of evacuating vehicles going west out-of-region * % out-of-region vehicles exiting via I-75

Out of Region Vehicles Using US 41 by Model Evacuation Zone of Origin

Evacuating Vehicles to Out-of-County Destination * % of evacuating vehicles going west out-of-region * % out-of-region vehicles exiting via US 41

Figure 7: Miami-Dade County MDOutRoute Tab Example

Miami-Dade County

Percent of Out of Region Vehicles Using Specific Routes by Evacuation Zone of Origin

Model Evac Zone	Percent of Out of Region Vehicles by Specific Route				
	Northbound		Westbound		
	I-95	Turnpike	I-75	US 41	Total
1	29%	51%	15%	5%	100%
2	29%	51%	15%	5%	100%
3	29%	51%	15%	5%	100%
4	29%	51%	15%	5%	100%
5	29%	51%	15%	5%	100%
6	29%	51%	15%	5%	100%
7	29%	51%	15%	5%	100%
8	29%	51%	15%	5%	100%
9	29%	51%	15%	5%	100%
10	29%	51%	15%	5%	100%
11	29%	51%	15%	5%	100%
12	29%	51%	15%	5%	100%
13	29%	51%	15%	5%	100%
14	29%	51%	15%	5%	100%
15	29%	51%	15%	5%	100%
16	29%	51%	15%	5%	100%
17	29%	51%	15%	5%	100%

Out of Region Vehicles by Route by Evacuation Zone of Origin					
I-95 Northbound					
1A	1B	2A	2B	3A	3B
356	394	359	401	416	462
1,535	1,933	1,574	1,998	1,804	2,277
31	31	31	31	36	36
92	96	92	97	107	112
703	936	726	975	828	1,105
1,198	1,310	1,209	1,328	1,401	1,534
401	446	405	454	469	523
438	487	443	495	512	571
193	225	196	230	226	264
39	39	39	39	45	45
79	105	465	500	540	579
45	45	452	452	527	527
24	26	221	223	258	260
46	57	332	346	387	402
56	80	267	299	309	345
120	200	198	306	223	343
102	148	456	517	527	595

Table shows the percent out-of-county vehicles exiting northbound and westbound on each regional roadway. These loading factors onto each regional roadway can be modified by the user.

Calculation of how many vehicles from each model evacuation zone will load onto I-95 under each of the six baseline scenarios

Results Tabs

The **final four tabs** of the model summarize the outcomes of the unique hurricane scenario being modeled. **Tab 13, SF People** presents the total evacuating people by county of origin and indicates the number of evacuating people traveling to local residences, local shelters, local hotels/motels, out of the region and to destinations in adjacent counties. This tab enables the user to understand total public shelter demand and hotel/motel demand for each county by storm scenario.

Tab 14, SF Vehicles sums up the total evacuating vehicles by county of origin and shows the total vehicles traveling to local residences, local shelters, local hotels/motels, out of the region and to destinations in adjacent counties.

Tab 15, Vehicles by Road calculates the traffic volumes (the number of vehicles) on selected critical links. **Tab 16, Critical Links,** displays the clearance times for each of the selected critical links.

User Modifications

To calculate the effects of a **change in the number of units**, the user should make adjustments at the model evacuation zone level in the **MoSocio, MDSocio** and **BrSocio** tabs. For **changes to behavioral assumptions**, the user should revise the values in **MoBehav, MDBehav** and

BrBehav in the quick boxes shown at top of each spreadsheet - these values will then populate the model evacuation zones to calculate model outcomes. Users can also modify the **loading factors** onto the northbound and westbound regional roadways in **MoOutRoute, BrOutRoute** and **MDOutRoute.**

If the user is adding additional housing units, it is important to know in which model evacuation zone this new development falls. You can consult the Master Maps for Monroe, Miami-Dade and Broward County to determine the model evacuation zone in which the units should be added.

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APPENDICES

Appendix 1: User-Model Setup

Attachment 1: Monroe County Evacuation Zone Definition

Monroe County Current Evacuation Zones

Evacuation Zone 1
MileMarker 0 to MileMarker 6

Evacuation Zone 2
MileMarker 6 to MileMarker 40

Evacuation Zone 3
MileMarker 40 to MileMarker 63

Evacuation Zone 4
MileMarker 63 to three-way stop at CR 905-A

Evacuation Zone 5
Card Sound Road (905-A) to Mainland Monroe County, including Ocean Reef

Evacuation Zone 6
Mainland Areas of Monroe County

Monroe County Previous Seven Evacuation Zones (Used in Miller Consulting Inc. Model)

Evacuation Zone 1
MileMarker 0 to MileMarker 13
"Key West to Saddle Bunch Channel Bridge"

Evacuation Zone 2
MileMarker 13 to MileMarker 46
"Saddle Bunch Bridge to Knight Key Channel"

Evacuation Zone 3
MileMarker 46 to MileMarker 64
"Knight Key Channel to Long Key Viaduct"

Evacuation Zone 4
MileMarker 64 to MileMarker 84
"Long Key Viaduct to Whale Harbor Channel"

Evacuation Zone 5
MileMarker 84 to MileMarker 95
"Whale Harbor Channel to Milemarker 95"

Evacuation Zone 6
MileMarker 95 to MileMarker 113
"Along US 1"

Evacuation Zone 7
MileMarker 113 to ICWW
"Along Card Sound Road (905/905A)"

Attachment 2: User-Model
Broward County Example

2006 South Florida Regional Hurricane Evacuation Model

Broward County

Socio-Economic Data

Please note: Only numbers in blue are changeable by the user.

Model Evac Zone	Population in Units			Permanent Occupied Units	Change in Permanent Occ. Units	Mobile Home Units	Change in Mobile Home Units	Seasonal Tourist Units	Change in Tourist Units
	Permanent Occupied	Mobile Home	Seasonal Tourist						
Zone A	51,712	0	23,436	31,763	0	0	0	15,624	0
Zone B	100,680	218	4,710	53,066	0	116	0	3,140	0
Inland	1,548,107	48,565	23,777	589,475	0	20,108	0	15,851	0
1	5,633	0	662	3,611	0	0	0	441	0
2	8,523	0	4,917	5,394	0	0	0	3,278	0
3	515	0	558	322	0	0	0	372	0
4	5,654	0	9,155	3,490	0	0	0	6,103	0
5	3,239	0	1,031	1,905	0	0	0	687	0
6	12,483	0	3,008	7,475	0	0	0	2,005	0
7	10,846	0	2,400	6,779	0	0	0	1,600	0
8	2,353	0	380	1,409	0	0	0	253	0
9	2,467	0	1,328	1,378	0	0	0	885	0
10	7,143	0	0	3,338	0	0	0	0	0
11	10,110	0	0	4,769	0	0	0	0	0
12	9,377	0	0	4,784	0	0	0	0	0
13	10,171	0	0	5,714	0	0	0	0	0
14	11,330	0	977	6,365	0	0	0	651	0
15	15,985	0	2,331	8,735	0	0	0	1,554	0
16	7,265	218	221	3,844	0	116	0	147	0
17	15,207	0	687	7,276	0	0	0	458	0
18	14,092	0	495	8,241	0	0	0	330	0
19	12,219	2,085	315	4,868	0	1,022	0	210	0
20	28,994	0	1,374	12,829	0	0	0	916	0
21	14,330	1,047	2,175	5,288	0	516	0	1,450	0
22	29,026	0	1,163	13,016	0	0	0	775	0
23	51,313	65	1,808	20,282	0	39	0	1,205	0
24	41,006	195	876	17,086	0	138	0	584	0
25	34,595	1,027	161	13,154	0	319	0	107	0
26	21,195	1,283	141	7,463	0	418	0	94	0
27	23,170	349	1,022	8,946	0	209	0	681	0
28	42,264	2,150	1,026	21,027	0	1,086	0	684	0
29	62,098	2,453	3,584	27,117	0	1,095	0	2,389	0
30	98,810	1,261	1,058	33,839	0	457	0	705	0
31	25,105	5,278	869	10,417	0	2,562	0	579	0
32	75,094	4,721	269	28,231	0	2,227	0	179	0
33	96,623	129	231	32,533	0	41	0	154	0
34	63,078	4,918	972	24,932	0	1,944	0	648	0
35	128,345	0	2,072	51,338	0	0	0	1,381	0
36	240,091	1,754	614	96,811	0	645	0	409	0
37	153,284	8,166	1,019	54,356	0	3,093	0	679	0
38	20,904	931	1,116	6,968	0	350	0	744	0
39	54,152	7,953	359	17,301	0	2,924	0	239	0
40	78,002	1,351	552	31,968	0	504	0	368	0
41	76,969	1,448	576	23,978	0	519	0	384	0
42	77,438	0	431	25,727	0	0	0	287	0
Total	1,700,499	48,783	51,923	674,304	0	20,224	0	34,615	0

Broward
Socio-Ec
Please n

Model Evac Zone	People Per Unit			Vehicles Per Unit			Total Vehicles in Units			Tourist Occupancy	
	Permanent Unit	Mobile Home Unit	Tourist Unit	Permanent Unit	Mobile Home Unit	Tourist Unit	Permanent Unit	Mobile Home Unit	Tourist Unit	68% Low	86% High
Zone A	1.63	0.00	1.50	1.12	0.00	1.05	35,575	0	16,405	68%	86%
Zone B	1.90	1.88	1.50	1.39	1.40	1.05	73,516	162	3,298	68%	86%
Inland	2.63	2.42	1.50	1.63	1.51	1.05	958,798	30,463	16,642	68%	86%
1	1.56	2.41	1.50	0.79	1.51	1.05	2,853	0	463	68%	86%
2	1.58	2.41	1.50	0.97	1.51	1.05	5,232	0	3,442	68%	86%
3	1.60	2.41	1.50	1.40	1.51	1.05	451	0	391	68%	86%
4	1.62	2.41	1.50	1.20	1.51	1.05	4,188	0	6,408	68%	86%
5	1.70	2.41	1.50	1.34	1.51	1.05	2,553	0	721	68%	86%
6	1.67	2.41	1.50	1.19	1.51	1.05	8,895	0	2,105	68%	86%
7	1.60	2.41	1.50	1.17	1.51	1.05	7,931	0	1,680	68%	86%
8	1.67	2.41	1.50	1.32	1.51	1.05	1,860	0	266	68%	86%
9	1.79	2.41	1.50	1.17	1.51	1.05	1,612	0	929	68%	86%
10	2.14	2.41	1.50	1.59	1.51	1.05	5,307	0	0	68%	86%
11	2.12	2.41	1.50	1.61	1.51	1.05	7,678	0	0	68%	86%
12	1.96	2.41	1.50	1.55	1.51	1.05	7,415	0	0	68%	86%
13	1.78	2.41	1.50	1.48	1.51	1.05	8,457	0	0	68%	86%
14	1.78	2.41	1.50	1.39	1.51	1.05	8,847	0	684	68%	86%
15	1.83	2.41	1.50	1.44	1.51	1.05	12,578	0	1,632	68%	86%
16	1.89	1.88	1.50	1.36	1.40	1.05	5,228	162	154	68%	86%
17	2.09	2.41	1.50	1.41	1.51	1.05	10,259	0	481	68%	86%
18	1.71	2.41	1.50	0.94	1.51	1.05	7,747	0	347	68%	86%
19	2.51	2.04	1.50	1.23	1.21	1.05	5,988	1,237	221	68%	86%
20	2.26	2.41	1.50	1.30	1.51	1.05	16,678	0	962	68%	86%
21	2.71	2.03	1.50	1.27	1.36	1.05	6,716	702	1,523	68%	86%
22	2.23	2.41	1.50	1.31	1.51	1.05	17,051	0	814	68%	86%
23	2.53	1.66	1.50	1.38	1.09	1.05	27,989	43	1,265	68%	86%
24	2.40	1.41	1.50	1.55	0.86	1.05	26,483	119	613	68%	86%
25	2.63	3.22	1.50	1.48	1.19	1.05	19,468	380	112	68%	86%
26	2.84	3.07	1.50	1.63	1.63	1.05	12,165	681	99	68%	86%
27	2.59	1.67	1.50	1.51	1.18	1.05	13,508	247	715	68%	86%
28	2.01	1.98	1.50	1.28	1.44	1.05	26,915	1,564	718	68%	86%
29	2.29	2.24	1.50	1.41	1.40	1.05	38,235	1,533	2,508	68%	86%
30	2.92	2.76	1.50	1.51	1.64	1.05	51,097	749	740	68%	86%
31	2.41	2.06	1.50	1.70	1.47	1.05	17,709	3,766	608	68%	86%
32	2.66	2.12	1.50	1.57	1.23	1.05	44,323	2,739	188	68%	86%
33	2.97	3.14	1.50	1.81	1.88	1.05	58,885	77	162	68%	86%
34	2.53	2.53	1.50	1.71	1.66	1.05	42,634	3,227	680	68%	86%
35	2.50	2.41	1.50	1.55	1.51	1.05	79,574	0	1,450	68%	86%
36	2.48	2.72	1.50	1.61	1.47	1.05	155,866	948	429	68%	86%
37	2.82	2.64	1.50	1.80	1.61	1.05	97,841	4,980	713	68%	86%
38	3.00	2.66	1.50	2.09	1.77	1.05	14,563	620	781	68%	86%
39	3.13	2.72	1.50	2.07	1.72	1.05	35,813	5,029	251	68%	86%
40	2.44	2.68	1.50	1.62	1.74	1.05	51,788	877	386	68%	86%
41	3.21	2.79	1.50	1.91	1.82	1.05	45,798	945	403	68%	86%
42	3.01	2.41	1.50	2.01	1.51	1.05	51,711	0	301	68%	86%
Total	2.52	2.41	1.50	1.58	1.51	1.05	1,067,889	30,625	36,345	68%	86%

Broward County
Behavioral Data

Model Evac Zone	Participation Rates by Storm Intensity and Unit Type								
	Scenario 1 (Category 1-2 Storm)			Scenario 2 (Category 3 Storm)			Scenario 3 (Category 4-5 Storm)		
	Permanent Units	Mobile Home Units	Tourist Units	Permanent Units	Mobile Home Units	Tourist Units	Permanent Units	Mobile Home Units	Tourist Units
Zone A	100%	100%	100%	100%	100%	100%	100%	100%	100%
Zone B	10%	100%	80%	100%	100%	100%	100%	100%	100%
Inland	5%	100%	80%	5%	100%	90%	10%	100%	100%
1	100%	100%	100%	100%	100%	100%	100%	100%	100%
2	100%	100%	100%	100%	100%	100%	100%	100%	100%
3	100%	100%	100%	100%	100%	100%	100%	100%	100%
4	100%	100%	100%	100%	100%	100%	100%	100%	100%
5	100%	100%	100%	100%	100%	100%	100%	100%	100%
6	100%	100%	100%	100%	100%	100%	100%	100%	100%
7	100%	100%	100%	100%	100%	100%	100%	100%	100%
8	100%	100%	100%	100%	100%	100%	100%	100%	100%
9	100%	100%	100%	100%	100%	100%	100%	100%	100%
10	10%	100%	80%	100%	100%	100%	100%	100%	100%
11	10%	100%	80%	100%	100%	100%	100%	100%	100%
12	10%	100%	80%	100%	100%	100%	100%	100%	100%
13	10%	100%	80%	100%	100%	100%	100%	100%	100%
14	10%	100%	80%	100%	100%	100%	100%	100%	100%
15	10%	100%	80%	100%	100%	100%	100%	100%	100%
16	10%	100%	80%	100%	100%	100%	100%	100%	100%
17	10%	100%	80%	100%	100%	100%	100%	100%	100%
18	10%	100%	80%	100%	100%	100%	100%	100%	100%
19	5%	100%	80%	5%	100%	90%	10%	100%	100%
20	5%	100%	80%	5%	100%	90%	10%	100%	100%
21	5%	100%	80%	5%	100%	90%	10%	100%	100%
22	5%	100%	80%	5%	100%	90%	10%	100%	100%
23	5%	100%	80%	5%	100%	90%	10%	100%	100%
24	5%	100%	80%	5%	100%	90%	10%	100%	100%
25	5%	100%	80%	5%	100%	90%	10%	100%	100%
26	5%	100%	80%	5%	100%	90%	10%	100%	100%
27	5%	100%	80%	5%	100%	90%	10%	100%	100%
28	5%	100%	80%	5%	100%	90%	10%	100%	100%
29	5%	100%	80%	5%	100%	90%	10%	100%	100%
30	5%	100%	80%	5%	100%	90%	10%	100%	100%
31	5%	100%	80%	5%	100%	90%	10%	100%	100%
32	5%	100%	80%	5%	100%	90%	10%	100%	100%
33	5%	100%	80%	5%	100%	90%	10%	100%	100%
34	5%	100%	80%	5%	100%	90%	10%	100%	100%
35	5%	100%	80%	5%	100%	90%	10%	100%	100%
36	5%	100%	80%	5%	100%	90%	10%	100%	100%
37	5%	100%	80%	5%	100%	90%	10%	100%	100%
38	5%	100%	80%	5%	100%	90%	10%	100%	100%
39	5%	100%	80%	5%	100%	90%	10%	100%	100%
40	5%	100%	80%	5%	100%	90%	10%	100%	100%
41	5%	100%	80%	5%	100%	90%	10%	100%	100%
42	5%	100%	80%	5%	100%	90%	10%	100%	100%
Total	10%	100%	89%	17%	100%	95%	21%	100%	100%

Broward
Behavio

Model Evac Zone	Vehicle Usage (%)		
	Permanent Units	Mobile Home Units	Tourist Units
Zone A	80%	80%	100%
Zone B	70%	70%	100%
Inland	70%	70%	100%
1	80%	80%	100%
2	80%	80%	100%
3	80%	80%	100%
4	80%	80%	100%
5	80%	80%	100%
6	80%	80%	100%
7	80%	80%	100%
8	80%	80%	100%
9	80%	80%	100%
10	70%	70%	100%
11	70%	70%	100%
12	70%	70%	100%
13	70%	70%	100%
14	70%	70%	100%
15	70%	70%	100%
16	70%	70%	100%
17	70%	70%	100%
18	70%	70%	100%
19	70%	70%	100%
20	70%	70%	100%
21	70%	70%	100%
22	70%	70%	100%
23	70%	70%	100%
24	70%	70%	100%
25	70%	70%	100%
26	70%	70%	100%
27	70%	70%	100%
28	70%	70%	100%
29	70%	70%	100%
30	70%	70%	100%
31	70%	70%	100%
32	70%	70%	100%
33	70%	70%	100%
34	70%	70%	100%
35	70%	70%	100%
36	70%	70%	100%
37	70%	70%	100%
38	70%	70%	100%
39	70%	70%	100%
40	70%	70%	100%
41	70%	70%	100%
42	70%	70%	100%
Total	70%	70%	100%

Broward
Behavio

Model Evac Zone	Permanent Resident Destination Percentages											
	Percent to Local Shelter			Percent to Local Hotel/Motel			Percent to Local Residence			Percent to Out of County		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Zone A	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
Zone B	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
Inland	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
1	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
2	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
3	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
4	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
5	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
6	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
7	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
8	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
9	2%	5%	10%	10%	10%	10%	58%	55%	45%	30%	30%	35%
10	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
11	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
12	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
13	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
14	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
15	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
16	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
17	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
18	2%	5%	10%	5%	5%	5%	63%	60%	50%	30%	30%	35%
19	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
20	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
21	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
22	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
23	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
24	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
25	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
26	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
27	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
28	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
29	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
30	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
31	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
32	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
33	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
34	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
35	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
36	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
37	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
38	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
39	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
40	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
41	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
42	2%	5%	10%	1%	1%	5%	67%	64%	50%	30%	30%	35%
Total	2%	5%	10%	2%	2%	5%	66%	63%	50%	30%	30%	35%

Broward
Behavio

Model Evac Zone	Mobile Home Destination Percentages											
	Percent to Public Shelter			Percent to Local Hotel/Motel			Percent to Local Residence			Percent to Out of County		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Zone A	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
Zone B	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
Inland	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
1	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
2	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
3	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
4	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
5	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
6	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
7	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
8	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
9	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
10	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
11	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
12	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
13	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
14	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
15	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
16	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
17	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
18	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
19	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
20	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
21	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
22	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
23	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
24	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
25	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
26	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
27	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
28	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
29	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
30	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
31	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
32	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
33	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
34	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
35	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
36	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
37	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
38	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
39	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
40	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
41	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
42	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%
Total	5%	8%	10%	1%	1%	1%	64%	61%	54%	30%	30%	35%

Broward
Behavio

Model Evac Zone	Tourist Destination Percentages								
	Percent to Local Public Shelter			Percent to Inland Hotel/Motel			Percent to Out of County		
	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3	Scenario 1	Scenario 2	Scenario 3
Zone A	1%	1%	2%	25%	20%	10%	74%	79%	88%
Zone B	1%	1%	2%	25%	20%	10%	74%	79%	88%
Inland	1%	1%	2%	0%	0%	0%	99%	99%	98%
1	1%	1%	2%	25%	20%	10%	74%	79%	88%
2	1%	1%	2%	25%	20%	10%	74%	79%	88%
3	1%	1%	2%	25%	20%	10%	74%	79%	88%
4	1%	1%	2%	25%	20%	10%	74%	79%	88%
5	1%	1%	2%	25%	20%	10%	74%	79%	88%
6	1%	1%	2%	25%	20%	10%	74%	79%	88%
7	1%	1%	2%	25%	20%	10%	74%	79%	88%
8	1%	1%	2%	25%	20%	10%	74%	79%	88%
9	1%	1%	2%	25%	20%	10%	74%	79%	88%
10	1%	1%	2%	25%	20%	10%	74%	79%	88%
11	1%	1%	2%	25%	20%	10%	74%	79%	88%
12	1%	1%	2%	25%	20%	10%	74%	79%	88%
13	1%	1%	2%	25%	20%	10%	74%	79%	88%
14	1%	1%	2%	25%	20%	10%	74%	79%	88%
15	1%	1%	2%	25%	20%	10%	74%	79%	88%
16	1%	1%	2%	25%	20%	10%	74%	79%	88%
17	1%	1%	2%	25%	20%	10%	74%	79%	88%
18	1%	1%	2%	25%	20%	10%	74%	79%	88%
19	1%	1%	2%	0%	0%	0%	99%	99%	98%
20	1%	1%	2%	0%	0%	0%	99%	99%	98%
21	1%	1%	2%	0%	0%	0%	99%	99%	98%
22	1%	1%	2%	0%	0%	0%	99%	99%	98%
23	1%	1%	2%	0%	0%	0%	99%	99%	98%
24	1%	1%	2%	0%	0%	0%	99%	99%	98%
25	1%	1%	2%	0%	0%	0%	99%	99%	98%
26	1%	1%	2%	0%	0%	0%	99%	99%	98%
27	1%	1%	2%	0%	0%	0%	99%	99%	98%
28	1%	1%	2%	0%	0%	0%	99%	99%	98%
29	1%	1%	2%	0%	0%	0%	99%	99%	98%
30	1%	1%	2%	0%	0%	0%	99%	99%	98%
31	1%	1%	2%	0%	0%	0%	99%	99%	98%
32	1%	1%	2%	0%	0%	0%	99%	99%	98%
33	1%	1%	2%	0%	0%	0%	99%	99%	98%
34	1%	1%	2%	0%	0%	0%	99%	99%	98%
35	1%	1%	2%	0%	0%	0%	99%	99%	98%
36	1%	1%	2%	0%	0%	0%	99%	99%	98%
37	1%	1%	2%	0%	0%	0%	99%	99%	98%
38	1%	1%	2%	0%	0%	0%	99%	99%	98%
39	1%	1%	2%	0%	0%	0%	99%	99%	98%
40	1%	1%	2%	0%	0%	0%	99%	99%	98%
41	1%	1%	2%	0%	0%	0%	99%	99%	98%
42	1%	1%	2%	0%	0%	0%	99%	99%	98%
Total	1%	1%	2%	14%	11%	5%	85%	88%	93%

Broward
Behavio

Model Evac Zone	Out of County Destinations (%)			
	Out of Region	Miami-Dade Shelter	Miami-Dade Hotel	Miami-Dade Residence
Zone A	60%	0%	5%	35%
Zone B	60%	0%	5%	35%
Inland	60%	0%	5%	35%
1	60%	0%	5%	35%
2	60%	0%	5%	35%
3	60%	0%	5%	35%
4	60%	0%	5%	35%
5	60%	0%	5%	35%
6	60%	0%	5%	35%
7	60%	0%	5%	35%
8	60%	0%	5%	35%
9	60%	0%	5%	35%
10	60%	0%	5%	35%
11	60%	0%	5%	35%
12	60%	0%	5%	35%
13	60%	0%	5%	35%
14	60%	0%	5%	35%
15	60%	0%	5%	35%
16	60%	0%	5%	35%
17	60%	0%	5%	35%
18	60%	0%	5%	35%
19	60%	0%	5%	35%
20	60%	0%	5%	35%
21	60%	0%	5%	35%
22	60%	0%	5%	35%
23	60%	0%	5%	35%
24	60%	0%	5%	35%
25	60%	0%	5%	35%
26	60%	0%	5%	35%
27	60%	0%	5%	35%
28	60%	0%	5%	35%
29	60%	0%	5%	35%
30	60%	0%	5%	35%
31	60%	0%	5%	35%
32	60%	0%	5%	35%
33	60%	0%	5%	35%
34	60%	0%	5%	35%
35	60%	0%	5%	35%
36	60%	0%	5%	35%
37	60%	0%	5%	35%
38	60%	0%	5%	35%
39	60%	0%	5%	35%
40	60%	0%	5%	35%
41	60%	0%	5%	35%
42	60%	0%	5%	35%
Total	60%	0%	5%	35%

Broward County
Evacuating People and Vehicle Statistics

Model Evac Zone	Total Evacuating People					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	67,648	71,867	67,648	71,867	67,648	71,867
Zone B	12,848	13,526	104,101	104,949	104,101	104,949
Inland	138,904	142,327	140,520	144,372	219,543	223,825
1	6,083	6,202	6,083	6,202	6,083	6,202
2	11,866	12,751	11,866	12,751	11,866	12,751
3	895	995	895	995	895	995
4	11,879	13,527	11,879	13,527	11,879	13,527
5	3,939	4,125	3,939	4,125	3,939	4,125
6	14,528	15,070	14,528	15,070	14,528	15,070
7	12,478	12,910	12,478	12,910	12,478	12,910
8	2,611	2,679	2,611	2,679	2,611	2,679
9	3,369	3,608	3,369	3,608	3,369	3,608
10	714	714	7,143	7,143	7,143	7,143
11	1,011	1,011	10,110	10,110	10,110	10,110
12	938	938	9,377	9,377	9,377	9,377
13	1,017	1,017	10,171	10,171	10,171	10,171
14	1,664	1,805	11,994	12,169	11,994	12,169
15	2,867	3,202	17,570	17,990	17,570	17,990
16	1,065	1,096	7,633	7,673	7,633	7,673
17	1,894	1,993	15,674	15,798	15,674	15,798
18	1,678	1,750	14,429	14,518	14,429	14,518
19	2,867	2,913	2,889	2,940	3,521	3,578
20	2,197	2,395	2,291	2,513	3,834	4,081
21	2,947	3,260	3,095	3,447	3,960	4,351
22	2,084	2,251	2,163	2,351	3,693	3,902
23	3,614	3,874	3,737	4,029	6,425	6,751
24	2,721	2,848	2,781	2,923	4,891	5,049
25	2,844	2,867	2,855	2,881	4,596	4,625
26	2,420	2,440	2,429	2,452	3,499	3,524
27	2,063	2,210	2,133	2,298	3,361	3,545
28	4,822	4,969	4,891	5,058	7,074	7,259
29	7,507	8,023	7,751	8,331	11,099	11,744
30	6,777	6,929	6,849	7,020	11,861	12,052
31	7,005	7,130	7,064	7,205	8,379	8,535
32	8,622	8,661	8,640	8,684	12,413	12,462
33	5,086	5,119	5,101	5,139	9,948	9,990
34	8,601	8,741	8,667	8,825	11,887	12,062
35	7,544	7,842	7,685	8,021	14,243	14,616
36	14,093	14,181	14,134	14,234	26,181	26,291
37	16,384	16,530	16,453	16,618	24,186	24,370
38	2,583	2,744	2,659	2,840	3,780	3,981
39	10,856	10,908	10,880	10,938	13,612	13,677
40	5,551	5,631	5,589	5,678	9,526	9,626
41	5,610	5,693	5,649	5,742	9,537	9,640
42	4,106	4,168	4,135	4,205	8,037	8,114
Total	219,400	227,720	312,269	321,188	391,292	400,641

Broward
Evacuati

Model Evac Zone	Evacuating People to Local Public Shelter					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	1,193	1,237	2,746	2,787	5,489	5,575
Zone B	238	244	5,084	5,093	10,153	10,172
Inland	4,107	4,140	7,901	7,940	20,662	20,746
1	117	118	286	287	572	575
2	204	213	460	468	919	937
3	14	15	30	31	59	61
4	175	192	345	361	690	723
5	72	74	169	171	338	342
6	270	276	645	650	1,289	1,300
7	233	238	559	563	1,117	1,126
8	50	50	120	121	240	242
9	58	61	132	135	265	269
10	14	14	357	357	714	714
11	20	20	506	506	1,011	1,011
12	19	19	469	469	938	938
13	20	20	509	509	1,017	1,017
14	28	29	573	575	1,146	1,150
15	45	48	815	819	1,630	1,639
16	27	27	382	383	751	752
17	34	35	765	766	1,530	1,533
18	31	32	708	709	1,416	1,418
19	118	119	199	200	335	336
20	36	38	81	83	309	314
21	79	82	133	136	278	285
22	35	37	80	82	306	310
23	64	67	145	147	544	551
24	56	57	123	125	441	445
25	87	87	170	170	451	451
26	86	86	157	157	342	343
27	46	48	92	94	280	284
28	155	157	284	286	652	655
29	204	209	373	379	915	928
30	168	169	354	356	1,129	1,132
31	294	295	490	492	791	794
32	313	313	567	568	1,227	1,228
33	104	105	253	254	982	983
34	314	316	557	559	1,136	1,139
35	140	143	334	337	1,312	1,319
36	331	332	744	745	2,585	2,587
37	567	569	1,043	1,044	2,363	2,367
38	74	75	134	135	317	321
39	454	454	774	774	1,342	1,343
40	149	149	306	307	923	925
41	153	153	312	313	922	924
42	80	80	196	197	780	782
Total	5,538	5,621	15,731	15,820	36,304	36,493

Broward
Evacuati

Model Evac Zone	Evacuating People to Local Hotel/Motel					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	9,156	10,210	8,357	8,357	6,765	7,187
Zone B	1,146	1,317	5,677	5,677	5,357	5,441
Inland	1,262	1,262	1,262	1,262	8,226	8,226
1	676	706	653	653	608	620
2	1,688	1,909	1,521	1,521	1,187	1,275
3	146	171	127	127	89	100
4	2,122	2,534	1,810	1,810	1,188	1,353
5	499	545	464	464	394	412
6	1,760	1,895	1,657	1,657	1,453	1,507
7	1,493	1,601	1,411	1,411	1,248	1,291
8	300	317	287	287	261	268
9	472	532	427	427	337	361
10	36	36	357	357	357	357
11	51	51	506	506	506	506
12	47	47	469	469	469	469
13	51	51	509	509	509	509
14	189	225	699	699	633	650
15	397	481	1,116	1,116	958	1,000
16	68	76	395	395	380	384
17	169	194	854	854	807	819
18	138	156	772	772	738	747
19	27	27	27	27	82	82
20	14	14	14	14	145	145
21	18	18	18	18	82	82
22	15	15	15	15	145	145
23	26	26	26	26	257	257
24	22	22	22	22	207	207
25	28	28	28	28	183	183
26	23	23	23	23	119	119
27	15	15	15	15	119	119
28	43	43	43	43	233	233
29	56	56	56	56	335	335
30	62	62	62	62	507	507
31	65	65	65	65	178	178
32	85	85	85	85	423	423
33	50	50	50	50	484	484
34	81	81	81	81	365	365
35	64	64	64	64	642	642
36	138	138	138	138	1,218	1,218
37	158	158	158	158	848	848
38	20	20	20	20	114	114
39	107	107	107	107	350	350
40	53	53	53	53	404	404
41	53	53	53	53	399	399
42	39	39	39	39	387	387
Total	11,564	12,789	15,296	15,296	20,348	20,854

Broward
Evacuati

Model Evac Zone	Evacuating People to Local Friends' and Relatives' Homes					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	**29,993**	**29,993**	**28,442**	**28,442**	**23,270**	**23,270**
Zone B	**6,483**	**6,483**	**60,541**	**60,541**	**50,457**	**50,457**
Inland	**82,941**	**82,941**	**79,164**	**79,164**	**103,629**	**103,629**
1	**3,267**	**3,267**	**3,098**	**3,098**	**2,535**	**2,535**
2	**4,943**	**4,943**	**4,687**	**4,687**	**3,835**	**3,835**
3	**299**	**299**	**283**	**283**	**232**	**232**
4	**3,279**	**3,279**	**3,110**	**3,110**	**2,544**	**2,544**
5	**1,878**	**1,878**	**1,781**	**1,781**	**1,457**	**1,457**
6	**7,240**	**7,240**	**6,866**	**6,866**	**5,617**	**5,617**
7	**6,291**	**6,291**	**5,966**	**5,966**	**4,881**	**4,881**
8	**1,365**	**1,365**	**1,294**	**1,294**	**1,059**	**1,059**
9	**1,431**	**1,431**	**1,357**	**1,357**	**1,110**	**1,110**
10	**450**	**450**	**4,286**	**4,286**	**3,572**	**3,572**
11	**637**	**637**	**6,066**	**6,066**	**5,055**	**5,055**
12	**591**	**591**	**5,626**	**5,626**	**4,688**	**4,688**
13	**641**	**641**	**6,103**	**6,103**	**5,085**	**5,085**
14	**714**	**714**	**6,798**	**6,798**	**5,665**	**5,665**
15	**1,007**	**1,007**	**9,591**	**9,591**	**7,993**	**7,993**
16	**597**	**597**	**4,492**	**4,492**	**3,750**	**3,750**
17	**958**	**958**	**9,124**	**9,124**	**7,603**	**7,603**
18	**888**	**888**	**8,455**	**8,455**	**7,046**	**7,046**
19	**1,744**	**1,744**	**1,663**	**1,663**	**1,737**	**1,737**
20	**971**	**971**	**928**	**928**	**1,450**	**1,450**
21	**1,150**	**1,150**	**1,098**	**1,098**	**1,282**	**1,282**
22	**972**	**972**	**929**	**929**	**1,451**	**1,451**
23	**1,760**	**1,760**	**1,682**	**1,682**	**2,601**	**2,601**
24	**1,498**	**1,498**	**1,431**	**1,431**	**2,155**	**2,155**
25	**1,816**	**1,816**	**1,734**	**1,734**	**2,284**	**2,284**
26	**1,531**	**1,531**	**1,461**	**1,461**	**1,753**	**1,753**
27	**1,000**	**1,000**	**954**	**954**	**1,347**	**1,347**
28	**2,792**	**2,792**	**2,664**	**2,664**	**3,274**	**3,274**
29	**3,650**	**3,650**	**3,483**	**3,483**	**4,429**	**4,429**
30	**4,117**	**4,117**	**3,931**	**3,931**	**5,622**	**5,622**
31	**4,219**	**4,219**	**4,023**	**4,023**	**4,105**	**4,105**
32	**5,537**	**5,537**	**5,283**	**5,283**	**6,304**	**6,304**
33	**3,319**	**3,319**	**3,170**	**3,170**	**4,901**	**4,901**
34	**5,261**	**5,261**	**5,019**	**5,019**	**5,810**	**5,810**
35	**4,300**	**4,300**	**4,107**	**4,107**	**6,417**	**6,417**
36	**9,166**	**9,166**	**8,753**	**8,753**	**12,952**	**12,952**
37	**10,361**	**10,361**	**9,886**	**9,886**	**12,074**	**12,074**
38	**1,296**	**1,296**	**1,237**	**1,237**	**1,548**	**1,548**
39	**6,904**	**6,904**	**6,584**	**6,584**	**7,002**	**7,002**
40	**3,478**	**3,478**	**3,320**	**3,320**	**4,629**	**4,629**
41	**3,505**	**3,505**	**3,346**	**3,346**	**4,630**	**4,630**
42	**2,594**	**2,594**	**2,478**	**2,478**	**3,872**	**3,872**
Total	**119,417**	**119,417**	**168,147**	**168,147**	**177,356**	**177,356**

Broward
Evacuati

Model Evac Zone	Evacuating People to Out of County					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	27,307	30,428	28,103	31,436	32,123	35,836
Zone B	4,981	5,483	32,799	33,469	38,133	38,879
Inland	50,595	53,985	52,194	56,008	87,029	91,221
1	2,023	2,111	2,045	2,139	2,367	2,472
2	5,031	5,686	5,198	5,897	5,925	6,704
3	435	510	454	534	514	603
4	6,303	7,522	6,614	7,916	7,457	8,907
5	1,490	1,627	1,525	1,672	1,750	1,913
6	5,258	5,659	5,361	5,788	6,169	6,645
7	4,462	4,781	4,543	4,884	5,232	5,613
8	897	947	910	964	1,051	1,111
9	1,408	1,585	1,453	1,642	1,658	1,868
10	214	214	2,143	2,143	2,500	2,500
11	303	303	3,033	3,033	3,539	3,539
12	281	281	2,813	2,813	3,282	3,282
13	305	305	3,051	3,051	3,560	3,560
14	733	837	3,923	4,062	4,550	4,704
15	1,418	1,666	6,048	6,379	6,990	7,359
16	372	396	2,363	2,395	2,751	2,786
17	733	806	4,931	5,029	5,733	5,842
18	622	675	4,494	4,564	5,228	5,307
19	978	1,023	1,000	1,050	1,367	1,423
20	1,175	1,371	1,267	1,488	1,930	2,173
21	1,701	2,011	1,847	2,196	2,318	2,701
22	1,061	1,227	1,140	1,326	1,791	1,996
23	1,763	2,020	1,884	2,174	3,023	3,342
24	1,145	1,270	1,204	1,345	2,087	2,242
25	914	936	924	950	1,677	1,706
26	779	799	788	811	1,285	1,310
27	1,002	1,148	1,071	1,235	1,614	1,794
28	1,832	1,978	1,901	2,065	2,916	3,097
29	3,597	4,108	3,838	4,413	5,420	6,052
30	2,430	2,581	2,501	2,671	4,605	4,791
31	2,428	2,551	2,486	2,625	3,305	3,458
32	2,687	2,726	2,705	2,749	4,460	4,507
33	1,612	1,645	1,628	1,665	3,581	3,622
34	2,945	3,084	3,011	3,166	4,577	4,748
35	3,041	3,336	3,180	3,512	5,873	6,238
36	4,458	4,546	4,499	4,598	9,426	9,534
37	5,297	5,443	5,366	5,529	8,902	9,081
38	1,194	1,353	1,269	1,448	1,801	1,998
39	3,391	3,442	3,415	3,473	4,918	4,981
40	1,873	1,951	1,910	1,998	3,571	3,668
41	1,899	1,981	1,938	2,030	3,585	3,686
42	1,393	1,455	1,422	1,491	2,997	3,073
Total	82,883	89,896	113,096	120,913	157,285	165,936

Broward
Evacuati

Model Evac Zone	Total Evacuating Vehicles					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	39,615	42,569	39,615	42,569	39,615	42,569
Zone B	7,052	7,527	53,818	54,411	53,818	54,411
Inland	63,936	66,333	65,066	67,762	99,757	102,750
1	2,597	2,681	2,597	2,681	2,597	2,681
2	6,526	7,146	6,526	7,146	6,526	7,146
3	627	697	627	697	627	697
4	7,708	8,861	7,708	8,861	7,708	8,861
5	2,533	2,662	2,533	2,662	2,533	2,662
6	8,547	8,926	8,547	8,926	8,547	8,926
7	7,487	7,790	7,487	7,790	7,487	7,790
8	1,669	1,717	1,669	1,717	1,669	1,717
9	1,921	2,089	1,921	2,089	1,921	2,089
10	371	371	3,715	3,715	3,715	3,715
11	537	537	5,375	5,375	5,375	5,375
12	519	519	5,191	5,191	5,191	5,191
13	592	592	5,920	5,920	5,920	5,920
14	991	1,090	6,658	6,781	6,658	6,781
15	1,768	2,003	9,914	10,208	9,914	10,208
16	563	585	3,878	3,905	3,878	3,905
17	980	1,049	7,508	7,595	7,508	7,595
18	731	781	5,659	5,721	5,659	5,721
19	1,196	1,228	1,211	1,247	1,435	1,475
20	1,107	1,246	1,172	1,328	1,822	1,995
21	1,555	1,774	1,659	1,905	1,997	2,271
22	1,040	1,157	1,095	1,227	1,747	1,894
23	1,698	1,880	1,784	1,989	2,850	3,077
24	1,344	1,432	1,385	1,485	2,354	2,464
25	1,008	1,024	1,016	1,034	1,705	1,725
26	956	971	963	979	1,396	1,413
27	1,035	1,138	1,083	1,199	1,605	1,733
28	2,427	2,531	2,476	2,593	3,467	3,596
29	3,776	4,137	3,946	4,353	5,455	5,906
30	2,715	2,822	2,766	2,885	4,604	4,737
31	3,587	3,674	3,628	3,727	4,289	4,399
32	3,571	3,598	3,584	3,614	5,148	5,182
33	2,203	2,226	2,214	2,240	4,286	4,315
34	4,121	4,219	4,167	4,277	5,706	5,828
35	3,574	3,783	3,672	3,907	6,556	6,817
36	6,352	6,414	6,381	6,451	11,866	11,943
37	7,298	7,401	7,347	7,462	10,820	10,948
38	1,369	1,481	1,422	1,548	1,984	2,125
39	4,910	4,946	4,927	4,968	6,198	6,243
40	2,636	2,692	2,663	2,725	4,502	4,571
41	2,484	2,542	2,511	2,576	4,141	4,214
42	1,974	2,017	1,994	2,043	3,824	3,879
Total	110,603	116,429	158,499	164,742	193,190	199,730

Broward
Evacuati

Model Evac Zone	Evacuating Vehicles to Local Public Shelter					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	**682**	**710**	**1,535**	**1,564**	**3,068**	**3,128**
Zone B	**126**	**131**	**2,605**	**2,611**	**5,202**	**5,213**
Inland	**1,829**	**1,853**	**3,484**	**3,512**	**9,071**	**9,130**
1	**49**	**50**	**117**	**118**	**235**	**236**
2	**107**	**113**	**233**	**239**	**465**	**478**
3	**10**	**11**	**21**	**21**	**41**	**43**
4	**111**	**122**	**211**	**223**	**422**	**445**
5	**46**	**47**	**107**	**108**	**214**	**217**
6	**157**	**160**	**370**	**374**	**740**	**748**
7	**138**	**141**	**329**	**332**	**657**	**663**
8	**32**	**32**	**76**	**77**	**152**	**153**
9	**32**	**34**	**71**	**72**	**142**	**145**
10	**7**	**7**	**186**	**186**	**371**	**371**
11	**11**	**11**	**269**	**269**	**537**	**537**
12	**10**	**10**	**260**	**260**	**519**	**519**
13	**12**	**12**	**296**	**296**	**592**	**592**
14	**16**	**17**	**314**	**316**	**629**	**631**
15	**26**	**29**	**451**	**454**	**903**	**909**
16	**14**	**14**	**193**	**193**	**379**	**380**
17	**17**	**18**	**362**	**363**	**725**	**726**
18	**13**	**13**	**274**	**274**	**547**	**548**
19	**49**	**49**	**81**	**81**	**132**	**132**
20	**17**	**18**	**35**	**37**	**130**	**133**
21	**38**	**40**	**60**	**63**	**117**	**122**
22	**16**	**18**	**35**	**36**	**130**	**133**
23	**28**	**30**	**59**	**61**	**216**	**221**
24	**26**	**27**	**57**	**58**	**202**	**204**
25	**28**	**28**	**56**	**56**	**164**	**165**
26	**33**	**33**	**60**	**60**	**134**	**135**
27	**22**	**23**	**42**	**43**	**122**	**124**
28	**77**	**79**	**139**	**140**	**308**	**310**
29	**94**	**98**	**168**	**172**	**409**	**418**
30	**66**	**67**	**136**	**137**	**420**	**423**
31	**148**	**148**	**246**	**247**	**396**	**398**
32	**128**	**128**	**232**	**232**	**505**	**505**
33	**45**	**45**	**108**	**109**	**420**	**420**
34	**146**	**147**	**259**	**261**	**534**	**536**
35	**64**	**66**	**148**	**150**	**577**	**582**
36	**145**	**145**	**328**	**329**	**1,163**	**1,165**
37	**247**	**248**	**454**	**456**	**1,043**	**1,046**
38	**36**	**37**	**65**	**66**	**156**	**159**
39	**202**	**203**	**346**	**346**	**606**	**607**
40	**69**	**70**	**142**	**143**	**429**	**431**
41	**67**	**68**	**136**	**136**	**392**	**394**
42	**38**	**38**	**92**	**93**	**366**	**367**
Total	**2,637**	**2,694**	**7,624**	**7,687**	**17,341**	**17,471**

Broward
Evacuati

Model Evac Zone	Evacuating Vehicles to Local Hotels and Motels					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	5,635	6,374	5,077	5,668	3,963	4,258
Zone B	707	828	3,023	3,143	2,800	2,858
Inland	548	548	548	548	3,569	3,569
1	307	328	291	308	260	268
2	1,004	1,159	887	1,011	653	715
3	103	120	89	103	63	70
4	1,424	1,713	1,207	1,437	771	886
5	327	359	302	328	253	266
6	1,069	1,164	998	1,074	855	893
7	920	996	863	923	749	779
8	194	206	185	195	167	172
9	287	329	255	289	192	209
10	19	19	186	186	186	186
11	27	27	269	269	269	269
12	26	26	260	260	260	260
13	30	30	296	296	296	296
14	124	149	403	427	356	368
15	266	325	662	721	551	581
16	40	46	205	211	195	197
17	101	119	424	442	392	400
18	74	87	318	331	295	301
19	11	11	11	11	30	30
20	6	6	6	6	58	58
21	7	7	7	7	28	28
22	6	6	6	6	60	60
23	10	10	10	10	98	98
24	10	10	10	10	94	94
25	9	9	9	9	71	71
26	9	9	9	9	47	47
27	6	6	6	6	49	49
28	20	20	20	20	105	105
29	24	24	24	24	145	145
30	23	23	23	23	184	184
31	33	33	33	33	88	88
32	35	35	35	35	174	174
33	21	21	21	21	207	207
34	38	38	38	38	172	172
35	28	28	28	28	279	279
36	61	61	61	61	552	552
37	69	69	69	69	377	377
38	9	9	9	9	55	55
39	48	48	48	48	161	161
40	24	24	24	24	187	187
41	23	23	23	23	167	167
42	18	18	18	18	181	181
Total	6,890	7,750	8,648	9,359	10,332	10,685

Broward
Evacuati

Model Evac Zone	Evacuating Vehicles to Local Friends and Relatives Homes					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	16,507	16,507	15,652	15,652	12,807	12,807
Zone B	3,315	3,315	30,947	30,947	25,790	25,790
Inland	36,129	36,129	34,483	34,483	45,073	45,073
1	1,324	1,324	1,255	1,255	1,027	1,027
2	2,428	2,428	2,302	2,302	1,884	1,884
3	209	209	198	198	162	162
4	1,943	1,943	1,843	1,843	1,508	1,508
5	1,185	1,185	1,123	1,123	919	919
6	4,127	4,127	3,914	3,914	3,202	3,202
7	3,680	3,680	3,490	3,490	2,855	2,855
8	863	863	818	818	670	670
9	748	748	709	709	580	580
10	234	234	2,229	2,229	1,857	1,857
11	339	339	3,225	3,225	2,687	2,687
12	327	327	3,114	3,114	2,595	2,595
13	373	373	3,552	3,552	2,960	2,960
14	390	390	3,716	3,716	3,096	3,096
15	555	555	5,283	5,283	4,402	4,402
16	303	303	2,265	2,265	1,891	1,891
17	452	452	4,309	4,309	3,591	3,591
18	342	342	3,254	3,254	2,711	2,711
19	695	695	662	662	677	677
20	391	391	374	374	584	584
21	472	472	450	450	500	500
22	400	400	382	382	597	597
23	676	676	645	645	996	996
24	674	674	644	644	972	972
25	627	627	598	598	825	825
26	590	590	563	563	683	683
27	427	427	408	408	566	566
28	1,332	1,332	1,271	1,271	1,533	1,533
29	1,583	1,583	1,511	1,511	1,918	1,918
30	1,534	1,534	1,464	1,464	2,072	2,072
31	2,102	2,102	2,005	2,005	2,043	2,043
32	2,266	2,266	2,162	2,162	2,587	2,587
33	1,415	1,415	1,352	1,352	2,090	2,090
34	2,445	2,445	2,333	2,333	2,712	2,712
35	1,866	1,866	1,782	1,782	2,785	2,785
36	4,080	4,080	3,896	3,896	5,814	5,814
37	4,525	4,525	4,318	4,318	5,307	5,307
38	619	619	591	591	744	744
39	3,093	3,093	2,950	2,950	3,154	3,154
40	1,607	1,607	1,535	1,535	2,144	2,144
41	1,497	1,497	1,429	1,429	1,960	1,960
42	1,213	1,213	1,158	1,158	1,810	1,810
Total	55,951	55,951	81,082	81,082	83,670	83,670

Broward
Evacuati

Model Evac Zone	Evacuating Vehicles to Out of County					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	16,794	16,794	17,350	19,684	19,777	22,375
Zone B	2,905	2,905	17,243	17,713	20,025	20,547
Inland	25,427	25,427	26,546	29,218	42,045	44,979
1	918	918	933	999	1,076	1,149
2	2,988	2,988	3,105	3,594	3,525	4,070
3	305	305	318	374	360	422
4	4,230	4,230	4,447	5,359	5,007	6,022
5	976	976	1,000	1,103	1,146	1,260
6	3,194	3,194	3,266	3,565	3,750	4,084
7	2,749	2,749	2,806	3,045	3,226	3,492
8	580	580	589	627	680	722
9	854	854	886	1,018	1,007	1,154
10	111	111	1,114	1,114	1,300	1,300
11	161	161	1,612	1,612	1,881	1,881
12	156	156	1,557	1,557	1,817	1,817
13	178	178	1,776	1,776	2,072	2,072
14	461	461	2,225	2,323	2,577	2,685
15	921	921	3,518	3,750	4,058	4,317
16	206	206	1,215	1,237	1,413	1,437
17	409	409	2,413	2,481	2,801	2,877
18	302	302	1,813	1,863	2,106	2,161
19	442	442	457	492	597	636
20	693	693	758	912	1,050	1,219
21	1,038	1,038	1,141	1,385	1,351	1,620
22	617	617	672	803	960	1,104
23	984	984	1,069	1,272	1,539	1,762
24	633	633	674	773	1,086	1,195
25	345	345	352	370	645	664
26	324	324	331	347	531	548
27	579	579	627	742	868	994
28	998	998	1,046	1,161	1,521	1,648
29	2,074	2,074	2,243	2,645	2,984	3,426
30	1,092	1,092	1,142	1,261	1,929	2,059
31	1,304	1,304	1,345	1,443	1,762	1,869
32	1,142	1,142	1,154	1,185	1,882	1,915
33	722	722	733	759	1,570	1,598
34	1,492	1,492	1,537	1,646	2,288	2,408
35	1,616	1,616	1,714	1,947	2,916	3,172
36	2,067	2,067	2,096	2,164	4,337	4,413
37	2,457	2,457	2,505	2,619	4,092	4,218
38	704	704	756	882	1,029	1,167
39	1,567	1,567	1,584	1,624	2,277	2,321
40	936	936	962	1,024	1,741	1,809
41	896	896	923	988	1,622	1,693
42	705	705	725	774	1,468	1,521
Total	45,126	45,126	61,139	66,615	81,847	87,901

Broward
Evacuati

Model Evac Zone	Total Evacuating Vehicles From Baseline 2006 SFRHEM					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	**39,615**	**42,569**	**39,615**	**42,569**	**39,615**	**42,569**
Zone B	**7,052**	**7,527**	**53,818**	**54,411**	**53,818**	**54,411**
Inland	**63,936**	**66,333**	**65,066**	**67,762**	**99,757**	**102,750**
1	2,597	2,681	2,597	2,681	2,597	2,681
2	6,526	7,146	6,526	7,146	6,526	7,146
3	627	697	627	697	627	697
4	7,708	8,861	7,708	8,861	7,708	8,861
5	2,533	2,662	2,533	2,662	2,533	2,662
6	8,547	8,926	8,547	8,926	8,547	8,926
7	7,487	7,790	7,487	7,790	7,487	7,790
8	1,669	1,717	1,669	1,717	1,669	1,717
9	1,921	2,089	1,921	2,089	1,921	2,089
10	371	371	3,715	3,715	3,715	3,715
11	537	537	5,375	5,375	5,375	5,375
12	519	519	5,191	5,191	5,191	5,191
13	592	592	5,920	5,920	5,920	5,920
14	991	1,090	6,658	6,781	6,658	6,781
15	1,768	2,003	9,914	10,208	9,914	10,208
16	563	585	3,878	3,905	3,878	3,905
17	980	1,049	7,508	7,595	7,508	7,595
18	731	781	5,659	5,721	5,659	5,721
19	1,196	1,228	1,211	1,247	1,435	1,475
20	1,107	1,246	1,172	1,328	1,822	1,995
21	1,555	1,774	1,659	1,905	1,997	2,271
22	1,040	1,157	1,095	1,227	1,747	1,894
23	1,698	1,880	1,784	1,989	2,850	3,077
24	1,344	1,432	1,385	1,485	2,354	2,464
25	1,008	1,024	1,016	1,034	1,705	1,725
26	956	971	963	979	1,396	1,413
27	1,035	1,138	1,083	1,199	1,605	1,733
28	2,427	2,531	2,476	2,593	3,467	3,596
29	3,776	4,137	3,946	4,353	5,455	5,906
30	2,715	2,822	2,766	2,885	4,604	4,737
31	3,587	3,674	3,628	3,727	4,289	4,399
32	3,571	3,598	3,584	3,614	5,148	5,182
33	2,203	2,226	2,214	2,240	4,286	4,315
34	4,121	4,219	4,167	4,277	5,706	5,828
35	3,574	3,783	3,672	3,907	6,556	6,817
36	6,352	6,414	6,381	6,451	11,866	11,943
37	7,298	7,401	7,347	7,462	10,820	10,948
38	1,369	1,481	1,422	1,548	1,984	2,125
39	4,910	4,946	4,927	4,968	6,198	6,243
40	2,636	2,692	2,663	2,725	4,502	4,571
41	2,484	2,542	2,511	2,576	4,141	4,214
42	1,974	2,017	1,994	2,043	3,824	3,879
Total	**110,603**	**116,429**	**158,499**	**164,742**	**193,190**	**199,730**

Broward
Evacuati

Model Evac Zone	Evacuating Vehicles to Out of County From Baseline 2006 SFRHEM					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	**16,794**	**16,794**	**17,350**	**19,684**	**19,777**	**22,375**
Zone B	**2,905**	**2,905**	**17,243**	**17,713**	**20,025**	**20,547**
Inland	**25,427**	**25,427**	**26,546**	**29,218**	**42,045**	**44,979**
1	918	918	933	999	1,076	1,149
2	2,988	2,988	3,105	3,594	3,525	4,070
3	305	305	318	374	360	422
4	4,230	4,230	4,447	5,359	5,007	6,022
5	976	976	1,000	1,103	1,146	1,260
6	3,194	3,194	3,266	3,565	3,750	4,084
7	2,749	2,749	2,806	3,045	3,226	3,492
8	580	580	589	627	680	722
9	854	854	886	1,018	1,007	1,154
10	111	111	1,114	1,114	1,300	1,300
11	161	161	1,612	1,612	1,881	1,881
12	156	156	1,557	1,557	1,817	1,817
13	178	178	1,776	1,776	2,072	2,072
14	461	461	2,225	2,323	2,577	2,685
15	921	921	3,518	3,750	4,058	4,317
16	206	206	1,215	1,237	1,413	1,437
17	409	409	2,413	2,481	2,801	2,877
18	302	302	1,813	1,863	2,106	2,161
19	442	442	457	492	597	636
20	693	693	758	912	1,050	1,219
21	1,038	1,038	1,141	1,385	1,351	1,620
22	617	617	672	803	960	1,104
23	984	984	1,069	1,272	1,539	1,762
24	633	633	674	773	1,086	1,195
25	345	345	352	370	645	664
26	324	324	331	347	531	548
27	579	579	627	742	868	994
28	998	998	1,046	1,161	1,521	1,648
29	2,074	2,074	2,243	2,645	2,984	3,426
30	1,092	1,092	1,142	1,261	1,929	2,059
31	1,304	1,304	1,345	1,443	1,762	1,869
32	1,142	1,142	1,154	1,185	1,882	1,915
33	722	722	733	759	1,570	1,598
34	1,492	1,492	1,537	1,646	2,288	2,408
35	1,616	1,616	1,714	1,947	2,916	3,172
36	2,067	2,067	2,096	2,164	4,337	4,413
37	2,457	2,457	2,505	2,619	4,092	4,218
38	704	704	756	882	1,029	1,167
39	1,567	1,567	1,584	1,624	2,277	2,321
40	936	936	962	1,024	1,741	1,809
41	896	896	923	988	1,622	1,693
42	705	705	725	774	1,468	1,521
Total	**45,126**	**45,126**	**61,139**	**66,615**	**81,847**	**87,901**

Broward
Evacuati

Model Evac Zone	Change in Evacuating Vehicles From Baseline 2006 SFRHEM					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	**0**	**0**	**0**	**0**	**0**	**0**
Zone B	**0**	**0**	**0**	**0**	**0**	**0**
Inland	**0**	**0**	**0**	**0**	**0**	**0**
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**

Broward
Evacuati

Model Evac Zone	Change in Evacuating Vehicles to Out of County From Baseline 2006 SFRHEM					
	Scenario 1A Category 1-2 Low Occ	Scenario 1B Category 1-2 High Occ	Scenario 2A Category 3 Low Occ	Scenario 2B Category 3 High Occ	Scenario 3A Category 4-5 Low Occ	Scenario 3B Category 4-5 High Occ
Zone A	**0**	**0**	**0**	**0**	**0**	**0**
Zone B	**0**	**0**	**0**	**0**	**0**	**0**
Inland	**0**	**0**	**0**	**0**	**0**	**0**
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**

Broward County

Percent of Out of Region Vehicles Using Specific Routes by Evac

Model Evac Zone	Percent of Out of Region Vehicles by Specific Route				
	Northbound			Westbnd	
	I-95	Turnpike	US 27	I-75	Total
1	31%	45%	4%	20%	100%
2	31%	45%	4%	20%	100%
3	31%	45%	4%	20%	100%
4	31%	45%	4%	20%	100%
5	31%	45%	4%	20%	100%
6	31%	45%	4%	20%	100%
7	31%	45%	4%	20%	100%
8	31%	45%	4%	20%	100%
9	31%	45%	4%	20%	100%
10	31%	45%	4%	20%	100%
11	31%	45%	4%	20%	100%
12	31%	45%	4%	20%	100%
13	31%	45%	4%	20%	100%
14	31%	45%	4%	20%	100%
15	31%	45%	4%	20%	100%
16	31%	45%	4%	20%	100%
17	31%	45%	4%	20%	100%
18	31%	45%	4%	20%	100%
19	31%	45%	4%	20%	100%
20	31%	45%	4%	20%	100%
21	31%	45%	4%	20%	100%
22	31%	45%	4%	20%	100%
23	31%	45%	4%	20%	100%
24	31%	45%	4%	20%	100%
25	31%	45%	4%	20%	100%
26	31%	45%	4%	20%	100%
27	31%	45%	4%	20%	100%
28	31%	45%	4%	20%	100%
29	31%	45%	4%	20%	100%
30	31%	45%	4%	20%	100%
31	31%	45%	4%	20%	100%
32	31%	45%	4%	20%	100%
33	31%	45%	4%	20%	100%
34	31%	45%	4%	20%	100%
35	31%	45%	4%	20%	100%
36	31%	45%	4%	20%	100%
37	31%	45%	4%	20%	100%
38	31%	45%	4%	20%	100%
39	31%	45%	4%	20%	100%
40	31%	45%	4%	20%	100%
41	31%	45%	4%	20%	100%
42	31%	45%	4%	20%	100%
Totals	31%	45%	4%	20%	100%

Broward County

Percent of Out of Region Vehicles Using Specific Routes by Evac

Evac Zone	Percent of Out of Region Vehicles by Specific Route				
	Northbound			Westbnd	
	I-95	Turnpike	US 27	I-75	Total
1	31%	45%	4%	20%	100%
2	31%	45%	4%	20%	100%
3	31%	45%	4%	20%	100%
4	31%	45%	4%	20%	100%
5	31%	45%	4%	20%	100%
6	31%	45%	4%	20%	100%
7	31%	45%	4%	20%	100%
8	31%	45%	4%	20%	100%
9	31%	45%	4%	20%	100%
10	31%	45%	4%	20%	100%
11	31%	45%	4%	20%	100%
12	31%	45%	4%	20%	100%
13	31%	45%	4%	20%	100%
14	31%	45%	4%	20%	100%
15	31%	45%	4%	20%	100%
16	31%	45%	4%	20%	100%
17	31%	45%	4%	20%	100%
18	31%	45%	4%	20%	100%
19	31%	45%	4%	20%	100%
20	31%	45%	4%	20%	100%
21	31%	45%	4%	20%	100%
22	31%	45%	4%	20%	100%
23	31%	45%	4%	20%	100%
24	31%	45%	4%	20%	100%
25	31%	45%	4%	20%	100%
26	31%	45%	4%	20%	100%
27	31%	45%	4%	20%	100%
28	31%	45%	4%	20%	100%
29	31%	45%	4%	20%	100%
30	31%	45%	4%	20%	100%
31	31%	45%	4%	20%	100%
32	31%	45%	4%	20%	100%
33	31%	45%	4%	20%	100%
34	31%	45%	4%	20%	100%
35	31%	45%	4%	20%	100%
36	31%	45%	4%	20%	100%
37	31%	45%	4%	20%	100%
38	31%	45%	4%	20%	100%
39	31%	45%	4%	20%	100%
40	31%	45%	4%	20%	100%
41	31%	45%	4%	20%	100%
42	31%	45%	4%	20%	100%
Totals	31%	45%	4%	20%	100%

Broward

Percentcuation Zone of Origin

Model Evac Zone	Out of Region Vehicles by Route by Evacuation Zone of Origin					
	I-95 Northbound					
	1A	1B	2A	2B	3A	3B
1	171	171	174	186	200	214
2	556	556	578	668	656	757
3	57	57	59	70	67	78
4	787	787	827	997	931	1,120
5	182	182	186	205	213	234
6	594	594	607	663	698	760
7	511	511	522	566	600	650
8	108	108	110	117	126	134
9	159	159	165	189	187	215
10	21	21	207	207	242	242
11	30	30	300	300	350	350
12	29	29	290	290	338	338
13	33	33	330	330	385	385
14	86	86	414	432	479	499
15	171	171	654	698	755	803
16	38	38	226	230	263	267
17	76	76	449	461	521	535
18	56	56	337	347	392	402
19	82	82	85	92	111	118
20	129	129	141	170	195	227
21	193	193	212	258	251	301
22	115	115	125	149	179	205
23	183	183	199	237	286	328
24	118	118	125	144	202	222
25	64	64	65	69	120	124
26	60	60	62	65	99	102
27	108	108	117	138	161	185
28	186	186	195	216	283	307
29	386	386	417	492	555	637
30	203	203	212	235	359	383
31	243	243	250	268	328	348
32	212	212	215	220	350	356
33	134	134	136	141	292	297
34	278	278	286	306	426	448
35	301	301	319	362	542	590
36	384	384	390	403	807	821
37	457	457	466	487	761	785
38	131	131	141	164	191	217
39	291	291	295	302	424	432
40	174	174	179	190	324	336
41	167	167	172	184	302	315
42	131	131	135	144	273	283
Totals	8,393	8,393	11,372	12,390	15,224	16,350

Broward

Percentcuation Zone of Origin

Evac Zone	2006 SFRHEM Out of Region Vehicles by Specific Route					
	I-95 Northbound					
	1A	1B	2A	2B	3A	3B
1	171	171	174	186	200	214
2	556	556	578	668	656	757
3	57	57	59	70	67	78
4	787	787	827	997	931	1,120
5	182	182	186	205	213	234
6	594	594	607	663	698	760
7	511	511	522	566	600	650
8	108	108	110	117	126	134
9	159	159	165	189	187	215
10	21	21	207	207	242	242
11	30	30	300	300	350	350
12	29	29	290	290	338	338
13	33	33	330	330	385	385
14	86	86	414	432	479	499
15	171	171	654	698	755	803
16	38	38	226	230	263	267
17	76	76	449	461	521	535
18	56	56	337	347	392	402
19	82	82	85	92	111	118
20	129	129	141	170	195	227
21	193	193	212	258	251	301
22	115	115	125	149	179	205
23	183	183	199	237	286	328
24	118	118	125	144	202	222
25	64	64	65	69	120	124
26	60	60	62	65	99	102
27	108	108	117	138	161	185
28	186	186	195	216	283	307
29	386	386	417	492	555	637
30	203	203	212	235	359	383
31	243	243	250	268	328	348
32	212	212	215	220	350	356
33	134	134	136	141	292	297
34	278	278	286	306	426	448
35	301	301	319	362	542	590
36	384	384	390	403	807	821
37	457	457	466	487	761	785
38	131	131	141	164	191	217
39	291	291	295	302	424	432
40	174	174	179	190	324	336
41	167	167	172	184	302	315
42	131	131	135	144	273	283
Totals	**8,393**	**8,393**	**11,372**	**12,390**	**15,224**	**16,350**

Broward

Percentcuation Zone of Origin

Evac Zone	Change from 2006 SFRHEM Out of Region Vehicles					
	I-95 Northbound					
	1A	1B	2A	2B	3A	3B
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
Totals	**0**	**0**	**0**	**0**	**0**	**0**

Broward
Percent

Model Evac Zone	Out of Region Vehicles by Route by Evacuation Zone of Origin					
	Turnpike Northbound					
	1A	1B	2A	2B	3A	3B
1	248	248	252	270	291	310
2	807	807	838	970	952	1,099
3	82	82	86	101	97	114
4	1,142	1,142	1,201	1,447	1,352	1,626
5	264	264	270	298	309	340
6	862	862	882	963	1,013	1,103
7	742	742	758	822	871	943
8	157	157	159	169	184	195
9	231	231	239	275	272	312
10	30	30	301	301	351	351
11	43	43	435	435	508	508
12	42	42	420	420	491	491
13	48	48	480	480	559	559
14	124	124	601	627	696	725
15	249	249	950	1,013	1,096	1,166
16	56	56	328	334	382	388
17	110	110	652	670	756	777
18	82	82	490	503	569	583
19	119	119	123	133	161	172
20	187	187	205	246	284	329
21	280	280	308	374	365	437
22	167	167	181	217	259	298
23	266	266	289	343	416	476
24	171	171	182	209	293	323
25	93	93	95	100	174	179
26	87	87	89	94	143	148
27	156	156	169	200	234	268
28	269	269	282	313	411	445
29	560	560	606	714	806	925
30	295	295	308	340	521	556
31	352	352	363	390	476	505
32	308	308	312	320	508	517
33	195	195	198	205	424	431
34	403	403	415	444	618	650
35	436	436	463	526	787	856
36	558	558	566	584	1,171	1,192
37	663	663	676	707	1,105	1,139
38	190	190	204	238	278	315
39	423	423	428	438	615	627
40	253	253	260	276	470	488
41	242	242	249	267	438	457
42	190	190	196	209	396	411
Totals	12,184	12,184	16,508	17,986	22,099	23,733

Broward
Percent

Evac Zone	2006 SFRHEM Out of Region Vehicles by Specific Route					
	Turnpike Northbound					
	1A	1B	2A	2B	3A	3B
1	248	248	252	270	291	310
2	807	807	838	970	952	1099
3	82	82	86	101	97	114
4	1142	1142	1201	1447	1352	1626
5	264	264	270	298	309	340
6	862	862	882	963	1013	1103
7	742	742	758	822	871	943
8	157	157	159	169	184	195
9	231	231	239	275	272	312
10	30	30	301	301	351	351
11	43	43	435	435	508	508
12	42	42	420	420	491	491
13	48	48	480	480	559	559
14	124	124	601	627	696	725
15	249	249	950	1013	1096	1166
16	56	56	328	334	382	388
17	110	110	652	670	756	777
18	82	82	490	503	569	583
19	119	119	123	133	161	172
20	187	187	205	246	284	329
21	280	280	308	374	365	437
22	167	167	181	217	259	298
23	266	266	289	343	416	476
24	171	171	182	209	293	323
25	93	93	95	100	174	179
26	87	87	89	94	143	148
27	156	156	169	200	234	268
28	269	269	282	313	411	445
29	560	560	606	714	806	925
30	295	295	308	340	521	556
31	352	352	363	390	476	505
32	308	308	312	320	508	517
33	195	195	198	205	424	431
34	403	403	415	444	618	650
35	436	436	463	526	787	856
36	558	558	566	584	1171	1192
37	663	663	676	707	1105	1139
38	190	190	204	238	278	315
39	423	423	428	438	615	627
40	253	253	260	276	470	488
41	242	242	249	267	438	457
42	190	190	196	209	396	411
Totals	**12,184**	**12,184**	**16,508**	**17,986**	**22,099**	**23,733**

Broward
Percent

Evac Zone	Change from 2006 SFRHEM Out of Region Vehicles					
	Turnpike Northbound					
	1A	1B	2A	2B	3A	3B
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
Totals	**0**	**0**	**0**	**0**	**0**	**0**

Broward
Percent

Model Evac Zone	Out of Region Vehicles by Route by Evacuation Zone of Origin					
	US 27 Northbound					
	1A	1B	2A	2B	3A	3B
1	22	22	22	24	26	28
2	72	72	75	86	85	98
3	7	7	8	9	9	10
4	102	102	107	129	120	145
5	23	23	24	26	28	30
6	77	77	78	86	90	98
7	66	66	67	73	77	84
8	14	14	14	15	16	17
9	21	21	21	24	24	28
10	3	3	27	27	31	31
11	4	4	39	39	45	45
12	4	4	37	37	44	44
13	4	4	43	43	50	50
14	11	11	53	56	62	64
15	22	22	84	90	97	104
16	5	5	29	30	34	34
17	10	10	58	60	67	69
18	7	7	44	45	51	52
19	11	11	11	12	14	15
20	17	17	18	22	25	29
21	25	25	27	33	32	39
22	15	15	16	19	23	27
23	24	24	26	31	37	42
24	15	15	16	19	26	29
25	8	8	8	9	15	16
26	8	8	8	8	13	13
27	14	14	15	18	21	24
28	24	24	25	28	37	40
29	50	50	54	63	72	82
30	26	26	27	30	46	49
31	31	31	32	35	42	45
32	27	27	28	28	45	46
33	17	17	18	18	38	38
34	36	36	37	40	55	58
35	39	39	41	47	70	76
36	50	50	50	52	104	106
37	59	59	60	63	98	101
38	17	17	18	21	25	28
39	38	38	38	39	55	56
40	22	22	23	25	42	43
41	22	22	22	24	39	41
42	17	17	17	19	35	37
Totals	1,083	1,083	1,467	1,599	1,964	2,110

Broward
Percent

Evac Zone	2006 SFRHEM Out of Region Vehicles by Specific Route					
	US 27 Northbound					
	1A	1B	2A	2B	3A	3B
1	22	22	22	24	26	28
2	72	72	75	86	85	98
3	7	7	8	9	9	10
4	102	102	107	129	120	145
5	23	23	24	26	28	30
6	77	77	78	86	90	98
7	66	66	67	73	77	84
8	14	14	14	15	16	17
9	21	21	21	24	24	28
10	3	3	27	27	31	31
11	4	4	39	39	45	45
12	4	4	37	37	44	44
13	4	4	43	43	50	50
14	11	11	53	56	62	64
15	22	22	84	90	97	104
16	5	5	29	30	34	34
17	10	10	58	60	67	69
18	7	7	44	45	51	52
19	11	11	11	12	14	15
20	17	17	18	22	25	29
21	25	25	27	33	32	39
22	15	15	16	19	23	27
23	24	24	26	31	37	42
24	15	15	16	19	26	29
25	8	8	8	9	15	16
26	8	8	8	8	13	13
27	14	14	15	18	21	24
28	24	24	25	28	37	40
29	50	50	54	63	72	82
30	26	26	27	30	46	49
31	31	31	32	35	42	45
32	27	27	28	28	45	46
33	17	17	18	18	38	38
34	36	36	37	40	55	58
35	39	39	41	47	70	76
36	50	50	50	52	104	106
37	59	59	60	63	98	101
38	17	17	18	21	25	28
39	38	38	38	39	55	56
40	22	22	23	25	42	43
41	22	22	22	24	39	41
42	17	17	17	19	35	37
Totals	**1,083**	**1,083**	**1,467**	**1,599**	**1,964**	**2,110**

Broward
Percent

Evac Zone	Change from 2006 SFRHEM Out of Region Vehicles					
	US 27 Northbound					
	1A	1B	2A	2B	3A	3B
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
Totals	**0**	**0**	**0**	**0**	**0**	**0**

Broward
Percent

Model Evac Zone	Out of Region Vehicles by Route by Evacuation Zone of Origin					
	I-75 Westbound					
	1A	1B	2A	2B	3A	3B
1	110	110	112	120	129	138
2	359	359	373	431	423	488
3	37	37	38	45	43	51
4	508	508	534	643	601	723
5	117	117	120	132	138	151
6	383	383	392	428	450	490
7	330	330	337	365	387	419
8	70	70	71	75	82	87
9	102	102	106	122	121	138
10	13	13	134	134	156	156
11	19	19	193	193	226	226
12	19	19	187	187	218	218
13	21	21	213	213	249	249
14	55	55	267	279	309	322
15	111	111	422	450	487	518
16	25	25	146	148	170	172
17	49	49	290	298	336	345
18	36	36	218	224	253	259
19	53	53	55	59	72	76
20	83	83	91	109	126	146
21	125	125	137	166	162	194
22	74	74	81	96	115	132
23	118	118	128	153	185	211
24	76	76	81	93	130	143
25	41	41	42	44	77	80
26	39	39	40	42	64	66
27	69	69	75	89	104	119
28	120	120	126	139	183	198
29	249	249	269	317	358	411
30	131	131	137	151	231	247
31	156	156	161	173	211	224
32	137	137	138	142	226	230
33	87	87	88	91	188	192
34	179	179	184	198	275	289
35	194	194	206	234	350	381
36	248	248	252	260	520	530
37	295	295	301	314	491	506
38	84	84	91	106	123	140
39	188	188	190	195	273	279
40	112	112	115	123	209	217
41	108	108	111	119	195	203
42	85	85	87	93	176	183
Totals	5,415	5,415	7,337	7,994	9,822	10,548

Broward
Percent

Evac Zone	2006 SFRHEM Out of Region Vehicles by Specific Route					
	I-75 Westbound					
	1A	1B	2A	2B	3A	3B
1	110	110	112	120	129	138
2	359	359	373	431	423	488
3	37	37	38	45	43	51
4	508	508	534	643	601	723
5	117	117	120	132	138	151
6	383	383	392	428	450	490
7	330	330	337	365	387	419
8	70	70	71	75	82	87
9	102	102	106	122	121	138
10	13	13	134	134	156	156
11	19	19	193	193	226	226
12	19	19	187	187	218	218
13	21	21	213	213	249	249
14	55	55	267	279	309	322
15	111	111	422	450	487	518
16	25	25	146	148	170	172
17	49	49	290	298	336	345
18	36	36	218	224	253	259
19	53	53	55	59	72	76
20	83	83	91	109	126	146
21	125	125	137	166	162	194
22	74	74	81	96	115	132
23	118	118	128	153	185	211
24	76	76	81	93	130	143
25	41	41	42	44	77	80
26	39	39	40	42	64	66
27	69	69	75	89	104	119
28	120	120	126	139	183	198
29	249	249	269	317	358	411
30	131	131	137	151	231	247
31	156	156	161	173	211	224
32	137	137	138	142	226	230
33	87	87	88	91	188	192
34	179	179	184	198	275	289
35	194	194	206	234	350	381
36	248	248	252	260	520	530
37	295	295	301	314	491	506
38	84	84	91	106	123	140
39	188	188	190	195	273	279
40	112	112	115	123	209	217
41	108	108	111	119	195	203
42	85	85	87	93	176	183
Totals	**5,415**	**5,415**	**7,337**	**7,994**	**9,822**	**10,548**

Broward
Percent

Evac Zone	Change from 2006 SFRHEM Out of Region Vehicles					
	I-75 Westbound					
	1A	1B	2A	2B	3A	3B
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	0	0	0	0	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	0	0	0	0	0	0
36	0	0	0	0	0	0
37	0	0	0	0	0	0
38	0	0	0	0	0	0
39	0	0	0	0	0	0
40	0	0	0	0	0	0
41	0	0	0	0	0	0
42	0	0	0	0	0	0
Totals	**0**	**0**	**0**	**0**	**0**	**0**

Appendix 2: Behavioral Data

SFRPC REGIONAL HURRICANE EVACUATION MODEL UPDATE | **PBS&J 2004 Regional Model** | **Miller Model (2004 Update)**

MONROE COUNTY POLICY-BASED BEHAVIORAL ASSUMPTIONS	Category 1-2	Category 3	Category 4-5	Category 1-2	Category 3	Category 4-5	Lower Keys		Middle Keys		Upper Keys	
Tourist Unit % Occupancy							Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5	Cat 1-2	Cat 3-5
Low Occupancy	45%	45%	45%	50%	50%	50%	45%	45%	45%	45%	45%	45%
High Occupancy	85%	85%	85%	75%	75%	75%	72%/64%	72%/64%	64%	64%	70%	70%
Participation Rates												
Permanent Occupied Unit	62%	100%	100%	70%	100%	100%	45%	60%	68%	80%	75%	85%
Mobile Home Unit	100%	100%	100%	70%	100%	100%	90%	95%	90%	95%	90%	95%
Tourist Unit	100%	100%	100%	85%	100%	100%	100%	100%	100%	100%	100%	100%
Vehicle Usage												
Permanent and Mobile Home Unit	80%	80%	80%	80%	80%	80%	69%	69%	70%	70%	71%	71%
Tourist Unit	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Permanent and Mobile Home Unit Destination Choices												
Out of Monroe County	75%	100%	100%	70%	90%	90%	75%	95%	80%	95%	85%	100%
To Local Residence	20%	0%	0%	18%	5%	5%	25%	5%	20%	5%	15%	0%
To Local Shelter	5%	0%	0%	10%	5%	5%	0%	0%	0%	0%	0%	0%
To Local Hotel	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%
Tourist Unit Evacuation Destination Choices												
Out of Monroe County	99%	100%	100%	99%	99%	99%	100%	100%	100%	100%	100%	100%
To Local Shelter	1%	0%	0%	1	1	1	0%	0%	0%	0%	0%	0%
Tourist Unit Out of County Destination Subsets												
Out of Region (Orlando/Out of State)	60%			Equivalent Data Not Included			Equivalent Data Not Included					
To Miami Dade County Residence	15%											
To Miami Dade County Hotel	5%											
To Broward County Residence	15%											
To Broward County Hotel	5%											
Permanent and Mobile Home Unit Out of County Destination Subsets												
Out of Region (Orlando/Out of State)	40%			Equivalent Data Not Included			Equivalent Data Not Included					
To Miami Dade County Residence	29%											
To Miami Dade County Hotel	10%											
To Miami Dade County Shelter	1%											
To Broward County Residence	15%											
To Broward County Hotel	5%											

Average participation looking at rates for Ivan and Georges

SFRPC REGIONAL HURRICANE EVACUATION MODEL UPDATE **PBS&J Regional Model (2004)**

MIAMI-DADE COUNTY POLICY-BASED BEHAVIORAL ASSUMPTIONS	Category 1-2	Category 3	Category 4-5	Category 1-2	Category 3	Category 4-5
Tourist Unit % Occupancy						
Low Occupancy	50%	50%	50%	35%	35%	35%
High Occupancy	85%	85%	85%	95%	95%	95%
Participation Rates						
% Participation Permanent Units						
County Evacuation Zone A	100%	100%	100%	70%	90%	100%
County Evacuation Zone B	10%	100%	100%	1%	90%	100%
County Evacuation Zone C	5%	10%	100%	1%	3%	100%
Inland Areas	5%	5%	10%	1%	3%	5%
% Participation Mobile Home Units						
County Evacuation Zone A	100%	100%	100%	70%	90%	100%
County Evacuation Zone B	100%	100%	100%	70%	90%	100%
County Evacuation Zone C	100%	100%	100%	70%	90%	100%
Inland Areas	100%	100%	100%	70%	3%	100%
% Participation Tourist Units						
County Evacuation Zone A	100%	100%	100%	80%	90%	100%
County Evacuation Zone B	80%	100%	100%	80%	90%	100%
County Evacuation Zone C	80%	90%	100%	80%	90%	100%
Inland Areas	80%	90%	100%	80%	90%	100%
Vehicle Usage						
Permanent Unit/Mobile Home Unit						
County Evacuation Zone A	80%	80%	80%	80%	80%	80%
County Evacuation Zone B	70%	70%	70%	70%	70%	70%
County Evacuation Zone C	70%	70%	70%	70%	70%	70%
Inland Areas	70%	70%	70%	70%	70%	70%
Tourist Unit						
County Evacuation Zone A	100%	100%	100%	100%	100%	100%
County Evacuation Zone B	100%	100%	100%	100%	100%	100%
County Evacuation Zone C	100%	100%	100%	100%	100%	100%
Inland Areas	100%	100%	100%	100%	100%	100%
Permanent Unit Destination Choices						
Out-of-County						
County Evacuation Zone A	30%	30%	35%	40%	50%	60%
County Evacuation Zone B	30%	30%	35%	40%	50%	60%
County Evacuation Zone C	30%	30%	35%	40%	50%	60%
Inland Areas	30%	30%	35%	40%	50%	60%
Shelter						
County Evacuation Zone A	2%	5%	10%	10%	10%	10%
County Evacuation Zone B	2%	5%	10%	10%	10%	10%
County Evacuation Zone C	2%	5%	10%	10%	10%	10%
Inland Areas	2%	5%	10%	10%	10%	10%
To Local Residence						
County Evacuation Zone A	58%	55%	45%	45%	35%	25%
County Evacuation Zone B	63%	60%	50%	45%	35%	25%
County Evacuation Zone C	63%	60%	50%	50%	40%	30%
Inland Areas	67%	64%	50%	50%	40%	30%

SFRPC REGIONAL HURRICANE EVACUATION MODEL UPDATE **PBS&J Regional Model (2004)**

MIAMI-DADE COUNTY POLICY-BASED BEHAVIORAL ASSUMPTIONS	Category 1-2	Category 3	Category 4-5	Category 1-2	Category 3	Category 4-5
To Hotel/Motel						
County Evacuation Zone A	10%	10%	10%	5%	5%	5%
County Evacuation Zone B	5%	5%	5%	5%	5%	5%
County Evacuation Zone C	5%	5%	5%	0%	0%	0%
Inland Areas	1%	1%	5%	0%	0%	0%
Mobile Home Unit Destination Choices						
Out-of-County						
County Evacuation Zone A	30%	30%	35%	Equivalent Data Not Included		
County Evacuation Zone B	30%	30%	35%			
County Evacuation Zone C	30%	30%	35%			
Inland Areas	30%	30%	35%			
Shelter						
County Evacuation Zone A	5%	8%	10%			
County Evacuation Zone B	5%	8%	10%			
County Evacuation Zone C	5%	8%	10%			
Inland Areas	5%	8%	10%			
To Local Residence						
County Evacuation Zone A	64%	61%	54%			
County Evacuation Zone B	64%	61%	54%			
County Evacuation Zone C	64%	61%	54%			
Inland Areas	64%	61%	54%			
To Hotel/Motel						
County Evacuation Zone A	1%	1%	1%			
County Evacuation Zone B	1%	1%	1%			
County Evacuation Zone C	1%	1%	1%			
Inland Areas	1%	1%	1%			
Tourist Unit Destination Choices						
Out-of-County						
County Evacuation Zone A	74%	79%	88%	99%	99%	99%
County Evacuation Zone B	74%	79%	88%	99%	99%	99%
County Evacuation Zone C	74%	79%	88%	99%	99%	99%
Inland Areas	99%	99%	98%	99%	99%	99%
Shelter						
County Evacuation Zone A	1%	1%	2%	1%	1%	1%
County Evacuation Zone B	1%	1%	2%	1%	1%	1%
County Evacuation Zone C	1%	1%	2%	1%	1%	1%
Inland Areas	1%	1%	2%	1%	1%	1%
Inland Hotels						
County Evacuation Zone A	25%	20%	10%	Equivalent Data Not Included		
County Evacuation Zone B	25%	20%	10%			
County Evacuation Zone C	25%	20%	10%			
Inland Areas	0%	0%	0%			
Out of County Destination Subsets						
Out of Region	50%			Equivalent Data Not Included		
To Broward County Residence	45%					
To Broward County Hotel	5%					

SFRPC REGIONAL HURRICANE EVACUATION MODEL UPDATE				PBS&J Regional Model (2004)		
BROWARD COUNTY POLICY-BASED BEHAVIORAL ASSUMPTIONS	**Category 1-2**	**Category 3**	**Category 4-5**	**Category 1-2**	**Category 3**	**Category 4-5**
Tourist Unit % Occupancy						
Low Occupancy	68%	68%	68%	35%	35%	35%
High Occupancy	86%	86%	86%	95%	95%	95%
Participation Rates						
% Participation Permanent Units						
County Evacuation Zone A	100%	100%	100%	100%	100%	100%
County Evacuation Zone B	10%	100%	100%	1%	100%	100%
Inland Areas	5%	5%	10%	1%	3%	3%
% Participation Mobile Home Units						
County Evacuation Zone A	100%	100%	100%	75%	95%	95%
County Evacuation Zone B	100%	100%	100%	75%	95%	95%
Inland Areas	100%	100%	100%	75%	95%	95%
% Participation Tourist Units						
County Evacuation Zone A	100%	100%	100%	85%	100%	100%
County Evacuation Zone B	80%	100%	100%	85%	100%	100%
Inland Areas	80%	90%	100%	85%	100%	100%
Vehicle Usage						
Permanent Unit/Mobile Home Unit						
County Evacuation Zone A	80%	80%	80%	80%	80%	80%
County Evacuation Zone B	70%	70%	70%	70%	70%	70%
Inland Areas	70%	70%	70%	70%	70%	70%
Tourist Unit						
County Evacuation Zone A	100%	100%	100%	100%	100%	100%
County Evacuation Zone B	100%	100%	100%	100%	100%	100%
Inland Areas	100%	100%	100%	100%	100%	100%
Permanent Unit Destination Choices						
Out-of-County						
County Evacuation Zone A	30%	30%	35%	35%	60%	60%
County Evacuation Zone B	30%	30%	35%	35%	60%	60%
Inland Areas	30%	30%	35%	35%	60%	60%
To Local Shelter						
County Evacuation Zone A	2%	5%	10%	10%	10%	10%
County Evacuation Zone B	2%	5%	10%	10%	10%	10%
Inland Areas	2%	5%	10%	10%	10%	10%
To Local Residence						
County Evacuation Zone A	58%	55%	45%	50%	25%	25%
County Evacuation Zone B	63%	60%	50%	50%	25%	25%
Inland Areas	67%	64%	50%	55%	30%	30%
To Hotel/Motel						
County Evacuation Zone A	10%	10%	10%	5%	5%	5%
County Evacuation Zone B	5%	5%	5%	5%	5%	5%
Inland Areas	1%	1%	5%	0%	0%	0%

SFRPC REGIONAL HURRICANE EVACUATION MODEL UPDATE **PBS&J Regional Model (2004)**

BROWARD COUNTY POLICY-BASED BEHAVIORAL ASSUMPTIONS	Category 1-2	Category 3	Category 4-5	Category 1-2	Category 3	Category 4-5
Mobile Home Unit Destination Choices						
Out-of-County						
County Evacuation Zone A	30%	30%	35%	Equivalent Data Not Included		
County Evacuation Zone B	30%	30%	35%			
Inland Areas	30%	30%	35%			
To Local Shelter						
County Evacuation Zone A	5%	8%	10%			
County Evacuation Zone B	5%	8%	10%			
Inland Areas	5%	8%	10%			
To Local Residence						
County Evacuation Zone A	64%	61%	54%			
County Evacuation Zone B	64%	61%	54%			
Inland Areas	64%	61%	54%			
To Hotel/Motel						
County Evacuation Zone A	1%	1%	1%			
County Evacuation Zone B	1%	1%	1%			
Inland Areas	1%	1%	1%			
Tourist Unit Destination Choices						
Out-of-County						
County Evacuation Zone A	74%	79%	88%	99%	99%	99%
County Evacuation Zone B	74%	79%	88%	99%	99%	99%
Inland Areas	99%	99%	98%	99%	99%	99%
Shelter						
County Evacuation Zone A	1%	1%	2%	1%	1%	1%
County Evacuation Zone B	1%	1%	2%	1%	1%	1%
Inland Areas	1%	1%	2%	1%	1%	1%
Inland Hotels						
County Evacuation Zone A	25%	20%	10%	Equivalent Data Not Included		
County Evacuation Zone B	25%	20%	10%			
Inland Areas	0%	0%	0%			
Out of County Destination Subsets						
Out of Region	60%			Equivalent Data Not Included		
To Miami Dade County Residence	35%					
To Miami Dade County Hotel	5%					

Appendix 3: Evacuation Traffic Graphs

Traffic Count Graphs

The traffic count graphs included provide information on the flow patterns of evacuating vehicles during the 2004 and 2005 hurricane evacuations. These maps are created from FDOT traffic count data from permanent count stations in Monroe, Miami-Dade and Broward counties. The data for the storm evacuation orders issued was provided by each county's emergency management agency.

These graphs enable an analysis of the number of vehicles per hour that travel across a roadway point before and after an evacuation order is called, how this volume compares to the yearly and two-month average hourly vehicle flows recorded at that traffic counter and how the traffic volume varies from hour to hour during the post-evacuation order 12-hour window.

The sets of graphs cannot be interpreted in the same way for each County. In order to understand a storm's out of county evacuation volumes in Monroe County, it is most accurate to look at the Key Largo traffic counter site 0164 graphs The majority of vehicles passing this point in the Upper Keys, just before the divergence of US 1 and Card Sound Rd., can be assumed to travel beyond the County.

The other Monroe count stations, 0165 and 0227, are useful in understanding the evacuation traffic volumes that originate from the Lower Keys and Key West. However, until there is a method to measure background traffic (those vehicles not evacuating out of county) and separate it from the total traffic volume captured in these graphs, it is more difficult to understand the magnitude of the out-of-county evacuation flows originating from these areas.

2004 South Florida Hurricane Evacuation Orders Issued

Monroe County:

Hurricane Charley
- Limited visitor evacuation from Key West to Craig Key (MM72) on August 11th at 11:00 am
- Visitor evacuation (from the entire Florida Keys) on August 12th at 5:00 am

Hurricane Frances:
- Visitor evacuation on September 2nd at 8:00 am

Hurricane Ivan:
- Visitor evacuation on September 9th at 8:00 am
- Mobile home, RV and boat resident evacuation on September 9th at 5:00 pm
- Resident evacuation on September 10th at 5:00 am

Miami-Dade County:

Hurricane Frances
- Voluntary evacuation order issued for inland areas and directed (mandatory) evacuation ordered for Evacuation Zones A &B, low-lying areas and the 8.5 SMA on September 2nd at 4:00 pm
- Evacuation order changed from evacuate to shelter-in-place on September 3rd at 7:00 pm

Hurricane Jeanne
- Directed (mandatory) evacuation order issued for Evacuation Zone A, mobile homes, MMF on September 25th at 7:00 am

Broward County:

Hurricane Frances
- Directed (mandatory) evacuation order issued on September 2nd at 2:00 pm

Hurricane Jeanne
- Voluntary evacuation order issued on September 24th at 5:00 pm
- Directed (mandatory) evacuation order issued on September 25th at 5:00 am

2005 South Florida Hurricane Evacuation Orders Issued

Monroe County:

Hurricane Dennis
- Visitor Evacuation: Thursday July 7th at noon
- Limited Resident Evacuation (West of 7-Mile Bridge to Key West), Thursday July 7th at 4 p.m.

Hurricane Rita
- Visitor Evacuation: Monday September 19th at 6 a.m.
- Resident Evacuation: Monday September 19th at 8 a.m.

Hurricane Wilma
- Visitor Evacuation: Wednesday, October 19th at noon
- Resident Evacuation: Saturday, October 22nd at noon

Miami-Dade County:

Hurricane Rita
- Voluntary evacuation order issued for Evacuation Zone A on August 19th at 7:00 pm
- Directed (mandatory) evacuation for mobile homes, low-lying areas and unsafe structure ordered on August 19th at 7:00 pm

Broward County:

Hurricane Rita
- Directed (mandatory) evacuation order issued on August 19th at 1:00 pm

Hurricane Katrina
- Voluntary evacuation issued on August 25th at 8:00 am

Hurricane Wilma
- Directed (mandatory) evacuation order issued on October 23rd at 12:00 noon

HURRICANE WILMA (OCTOBER 2005)
EVACUATION TRAFFIC PATTERN GRAPHS

Space reserved for
MONROE COUNTY HURRICANE WILMA GRAPHS

Space reserved for
MIAMI-DADE COUNTY HURRICANE WILMA GRAPHS

Space reserved for
BROWARD COUNTY HURRICANE WILMA GRAPHS

HURRICANE RITA (SEPTEMBER 2005)
EVACUATION TRAFFIC PATTERN GRAPHS

Space reserved for
MONROE COUNTY HURRICANE RITA GRAPHS

Space reserved for
MIAMI-DADE COUNTY HURRICANE RITA GRAPHS

Space reserved for
BROWARD COUNTY HURRICANE RITA GRAPHS

MONROE COUNTY
EVACUATION TRAFFIC PATTERN GRAPHS:
HURRICANES DENNIS CHARLEY, FRANCES, AND IVAN
(2004)

Space reserved for
MONROE COUNTY HURRICANE DENNIS GRAPHS

Space reserved for
MONROE COUNTY HURRICANE CHARLEY GRAPHS

Space reserved for
MONROE COUNTY HURRICANE FRANCES GRAPHS

Space reserved for
MONROE COUNTY HURRICANE IVAN GRAPHS

Appendix 4: Shelter Data

Monroe County Primary Shelter Locations and Capacities					
Shelter Number	**Shelter Name**	**Shelter Capacity**	**Address**	**City Name**	**Zip Code**
1	Key West High School	300	2100 Flagler Avenue	Key West	33040
2	Sugarloaf Elementary School	352	US 1 and Crane Road (MM 19 Bayside)	Sugarloaf Key	33042
3	Stanley Switlik Elementary School	280	3400 Overseas Highway (MM 48 Bayside)	Marathon	33050
4	Coral Shores High School	236	89901 Overseas Highway (MM 90 Oceanside)	Islamorada	33036
Total Primary Shelter Capacity		**1,168**			
5	FIU Shelter (Category 3 and higher storms)	700	11200 SW 8th Street	Miami	33174

Miami-Dade County Primary Shelter Locations and Capacities					
Shelter Number	**Shelter Name**	**Shelter Capacity**	**Address**	**City Name**	**Zip Code**
1	American Senior	2,558	18350 NW 67 Avenue	Miami	33015
2	Barbara Goleman Senior High	2,271	14100 NW 89 Avenue	Miami Lakes	33018
3	Booker T. Washington Senior High	1,028	1200 NW 6 Avenue	Miami	33136
4	Doral Middle School	1,360	5005 NW 112 Avenue	Doral	33178
5	Dr. Michael M. Krop Senior High	3,383	1410 Countyline Road	Miami	33179
6	Felix Varela Senior High	2,913	15255 SW 96 Street	Miami	33196
7	Hammocks Middle	1,467	9889 Hammocks Blvd.	Miami	33196
8	Hialeah Senior	1,400	251 E 47 Street	Hialeah	33013
9	Highland Oaks Middle	500	2375 NE 203rd Street	Miami	33180
10	John. A Ferguson Senior	1,231	15900 SW 56th Street	Miami	33193
11	Lawton Chiles Middle School	1,700	8190 NW 197 Street	Miami	33015
12	Miami Carol City Senior	2,929	3422 NW 187th Street	Opa-Locka	33056
13	Miami Coral Park Senior	1,131	8865 SW 16 Street	Miami	33174
14	Miami Norland Senior	2,478	1050 NW 195th Street	Miami	33169
15	Miami Northwestern Senior	567	1100 NW 71st Street	Miami	33150
16	North Miami Beach Senior High	3,152	1247 NE 167 Street	Miami	33162
17	North Miami Senior High	1,000	800 NE 137 Street	North Miami	33161
18	Robert Morgan Senior High	1,000	18180 SW 122 Avenue	Miami	33177
19	Ronald Reagan Senior High	1,000	8600 NW 107 Avenue	Doral	33178
20	South Miami Senior High	3,224	6856 SW 53 Street	Miami	33155
21	Sunshine Pavilion at Tamiami Park	2,450	10901 SW 24 Street	Miami	33165
22	W.R. Thomas Middle School	2,050	13001 SW 26 Street	Miami	33175
Total Primary Shelter Capacity		**40,792**			

Broward County Primary Shelter Locations and Capacities					
Shelter Number	**Shelter Name**	**Shelter Capacity**	**Address**	**City Name**	**Zip Code**
3701	Rock Island Elementary	2,400	1701 NW 23rd Avenue	Fort Lauderdale	33311
3771	Challenger Elementary School	815	5700 NW 94th Avenue	Tamarac	33321
3622	Falcon Cove Middle School	1,440	4251 Bonaventure Blvd	Weston	33332
3531	Fox Trail Elementary School	815	1250 S Nob Hill Road	Davie	33324
3101	Lyons Creek Middle School	1,790	4333 Sol Press Blvd	Coconut Creek	33073
4772	Millennium Middle School	500	5803 NW 94th Avenue	Tamarac	33321
3541	Monarch High School	1,800	5050 Wiles Road	Coconut Creek	33073
9999	New Renaissance Middle School	2,430	10701 Miramar Blvd	Miramar	33025
3761	Park Lakes Elementary School	815	3925 N State Road 7	Lauderdale Lakes	33319
941	Plantation Elementary School	815	651 NW 42nd Avenue	Fort Lauderdale	33317
185	Pompano Beach High School	1,800	1400 NE 6th Street	Pompano Beach	33060
3331	Silver Trail Middle School	1,790	18300 Sheridan Street	Southwest Ranches	33331
511	Watkins Elementary School	815	3520 SW 52nd Avenue	Pembroke Park	33023
Total Primary Shelter Capacity		**18,025**			

Appendix 5: Technical Advisory Team

Technical Advisory Team

Name	Title	Agency
Patrick Odom	Hurricane Program Manager	Florida Department of Community Affairs, Division of Emergency Management, Bureau of Preparedness and Response
Diane Quigley	Transportation Planner	Florida Department of Community Affairs, Division of Community Planning
Dan Evans	Planning Manager	Florida Department of Community Affairs, Division of Community Planning
Bill Leonard	Senior Planner	Broward County Planning Services Division, Department of Urban Planning and Urban Development
Sherman "Tony" Carper	Director	Broward County Emergency Management Agency
Lori VunKannon	Assistant Director	Broward County Emergency Management Agency
The Honorable Scott Shamlin	Councilman	City of Layton
Irene Toner	Director	Monroe County Emergency Management
Fred Gross	Planning Director	City of Marathon
Gail Kenson	Planning Director	City of Key West
Leonard "Ty" Symroski	Division Director	Monroe County Growth Management Division
Ed Koconis	Deputy Village Manager	Islamorada, Village of Islands
Thomas J. Willi	County Administrator	Monroe County
Shi-Chiang Li	Systems Planning Manager	Florida Department of Transportation - District IV, Planning and Environmental Management
Min-Tang Li	Senior Transportation Analyst	Florida Department of Transportation - District IV, Planning and Environmental Management
John Krane	Assistant District Planning Manager	Florida Department of Transportation - District IV
Karen McGuire	Transportation Planner	Florida Department of Transportation - District VI
Jonathon Lord	Emergency Management Coordinator	Miami-Dade County Office of Emergency Management
Frank Reddish	Emergency Management Coordinator	Miami-Dade County Office of Emergency Management
Helen Brown	Senior Planner	Miami-Dade County Department of Planning & Zoning
Napoleon V. Somoza	Principal Planner	Miami-Dade County Department of Planning & Zoning
Hugh Gladwin	Director	Florida International University, Institute for Public Opinion Research

Appendix 6: Baseline Scenario Results

2006 South Florida Regional Hurricane Evacuation Traffic Study
Baseline Scenario Results

Introduction

The 2006 South Florida Regional Hurricane Evacuation Traffic Study is designed to analyze the current regional hurricane evacuation traffic dynamics under six baseline hurricane evacuation scenarios. The Traffic Study analyzes how the evacuation traffic from Monroe, Miami-Dade and Broward Counties simultaneously converges on and impacts the regional roadway network. With its broad, three-county perspective, the Study charts the flow of vehicles to destinations inside and outside the region to generate clearance times and identify South Florida roadways prone to traffic congestion. It also sheds light on a central question in South Florida hurricane evacuation discussions: how Monroe County evacuation traffic interacts with Miami-Dade evacuation traffic, especially in southern Miami-Dade County, as it travels into and/or through Miami-Dade County.

The six baseline scenario outcomes include clearance times by critical link, total evacuating vehicles and people, public shelter demand and hotel room demand. The summary tables and attachments that follow display this information.

The overall clearance times generated for the worst case regional hurricane evacuation scenario, scenario 3B that characterizes a Category 4-5 storm and high tourist occupancy conditions, are also presented as the baseline clearance times in the following summary tables for policy purposes.

2006 South Florida Regional Hurricane Evacuation Traffic Study

Baseline Clearance Times[9]	
Regional Roadways	
I-95	9.9
Florida's Turnpike	22.1
US 27	3.4
I-75	8.5
US 41	9.7
Monroe County	35.7
Miami-Dade County	28.4
Broward County	6.2

Description: For this summary, clearance times are determined under the worst case baseline evacuation scenario (3B). 3B is designed to represent the simultaneous directed evacuation of all three counties under Category 4-5 storm conditions. It reflects an evacuation shaped by each county's current hurricane evacuation policies. For example, it represents the fact that, under Category 4-5 storm conditions, 100% of all Monroe County residents and tourists would be directed by emergency management officials to evacuate out-of-county.

User Model Inputs:

- 100% participation rate for all Monroe County unit types
- 100% participation rate for all unit types in Broward County Evacuation Zones A and B and Miami-Dade Evacuation Zones A, B and C.
- 80% vehicle usage rate for permanent occupied units and mobile home units (as presented by the PBS&J model)
- Card Sound Road critical link capacity is 600 vehicles/hour/lane (as presented by the Miller Model)
- 30% of all evacuating vehicles from Monroe County are allocated to Card Sound Road

Results:
Regional roadway clearance times range from 3.4 to 22.1 hours. Florida's Turnpike has the highest clearance time of 22.1 hours. Monroe County clearance time is 35.7 hours under the worst case regional hurricane evacuation scenario. Monroe County clearance time is based on its most critical link, the Snake Creek Bridge. Miami-Dade County clearance time is 28.4 hours under the worst case regional hurricane evacuation scenario. Miami-Dade County clearance time is based on its most critical link, US 1 through Florida City. Broward County clearance time is 6.2 hours under the worst case regional hurricane evacuation scenario. Broward County clearance time is based on its most critical link, the East Commercial Boulevard Bridge over the Intracoastal Waterway.

[9]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For a more detail, please review the following pages that show all critical links analyzed for all six baseline evacuation scenarios.

Space Reserved for Critical Links Map

2006 South Florida Regional Hurricane Evacuation Mode
Summary for All Baseline Scenarios
Critical Links Analysis

Critical Links	Clearance Times* from Baseline 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	5.8	6.3	7.3	8.1	9.0	9.9
Florida Turnpike northbound out of Region	11.7	13.2	15.7	17.7	20.0	22.1
US 27 northbound out of Region	2.7	2.7	3.0	3.0	3.3	3.4
I-75 west/northbound out of Region	5.2	5.5	6.4	7.0	7.9	8.5
US 41 westbound out of Region	5.6	6.4	7.1	8.0	8.8	9.7
Monroe County Critical Links						
Snake Creek Bridge	19.4	22.7	32.3	35.7	32.3	35.7
US 1 18-mile stretch out of the Florida Keys	18.2	21.2	30.0	33.0	30.0	33.0
Northbound Card Sound Road before Ocean Reef	19.3	22.5	32.0	35.3	32.0	35.3
Miami-Dade County Critical Links						
US 1 through Florida City	10.2	14.6	19.2	26.9	24.4	28.4
Northbound ramp from US 1 to the HEFT	9.0	10.3	15.3	20.0	20.7	23.9
Krome Avenue link through downtown Homestead	5.8	6.9	8.4	6.3	6.7	9.5
HEFT link north of the SW 312 Street interchange	5.3	5.9	8.6	10.9	11.9	13.5
Krome Avenue link north of Quail Roost Drive	4.4	7.1	10.5	13.2	8.0	9.7
HEFT link north of the SW 137th Avenue interchange	5.4	6.0	8.9	11.2	12.9	14.6
HEFT link north of the SW 112th Avenue interchange	5.1	5.9	8.9	11.2	13.5	14.7
HEFT link north of Coral Reef Road interchange	5.1	5.1	7.3	9.2	13.6	14.8
HEFT link south of US 27 interchange	4.5	5.2	7.0	8.8	11.5	13.0
McArthur Causeway	8.0	9.1	7.8	9.3	8.0	9.3
Venetian Causeway	7.0	7.8	7.3	8.4	6.8	8.0
Julia Tuttle Causeway	6.5	6.5	6.4	6.3	6.3	6.4
Kennedy Causeway	7.3	8.0	7.5	8.3	7.5	7.9
Broad Causeway (96th Street)	9.5	10.2	9.6	10.6	10.5	11.5
Sunny Isles Causeway	4.9	5.5	5.2	4.9	4.8	4.9
Lehman Causeway	3.6	3.5	3.5	3.7	3.4	3.5
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	5.8	5.7	5.0	5.2	5.4	5.9
Hollywood Blvd bridge over the Intracoastal	4.6	4.7	4.7	4.8	4.6	4.7
Sunrise Blvd bridge over the Intracoastal	4.5	4.8	4.6	4.8	4.5	4.7
Oakland Park Blvd bridge over the Intracoastal	5.4	5.7	5.4	5.7	5.4	5.7
NE 14th Street Bridge over the Intracoastal	4.0	4.1	4.1	4.1	4.1	4.2
Hillsboro bridge over the Intracoastal	4.3	4.4	4.4	4.4	4.4	4.5
Altantic Blvd bridge over the Intracoastal	4.7	4.7	4.6	4.7	4.6	4.6
SE 17th Street bridge over the Intracoastal	4.4	4.7	5.0	5.2	5.0	5.3
East Commercial Blvd bridge over the Intracoastal	5.9	6.1	6.1	6.2	6.0	6.2
Sheridan Street bridge over the Intracoastal	3.7	3.7	4.0	3.9	3.7	4.1
Dania Beach Blvd bridge over the Intracoastal	3.2	3.4	3.5	3.8	4.2	3.7
Las Olas bridge over the Intracoastal	3.7	3.9	3.0	3.2	3.0	3.2

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for All Baseline Scenarios
Evacuating Traffic on Critical Links

Critical Links	Evacuating Vehicles from Baseline 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	21,352	24,321	29,997	34,230	39,519	44,101
Florida Turnpike northbound out of Region	35,279	40,576	49,770	56,977	65,331	73,120
US 27 northbound out of Region	1,083	1,083	1,467	1,599	1,964	2,110
I-75 west/northbound out of Region	11,505	12,887	15,950	18,114	21,368	23,725
US 41 westbound out of Region	2,075	2,547	2,947	3,460	3,924	4,479
Monroe County Critical Links						
Snake Creek Bridge	20,761	24,770	36,207	40,255	36,207	40,256
US 1 18-mile stretch out of the Florida Keys	21,475	25,462	37,211	41,239	37,211	41,241
Northbound Card Sound Road before Ocean Reef	9,203	10,912	15,947	17,674	15,947	17,674
Miami-Dade County Critical Links						
US 1 through Florida City	13,104	20,013	27,347	39,688	35,749	42,082
Northbound ramp from US 1 to the HEFT	11,105	13,221	21,232	28,741	29,738	34,952
Krome Avenue link through downtown Homestead	2,447	3,127	4,094	2,757	3,018	4,757
HEFT link north of the SW 312 Street interchange	11,473	13,742	23,355	31,406	34,912	40,564
Krome Avenue link north of Quail Roost Drive	1,533	3,268	5,453	7,112	3,824	4,935
HEFT link north of the SW 137th Avenue interchange	11,865	14,063	24,231	32,478	38,408	44,290
HEFT link north of the SW 112th Avenue interchange	11,283	14,223	25,060	33,490	41,664	45,976
HEFT link north of Coral Reef Road interchange	17,169	17,272	29,342	40,016	64,219	71,071
HEFT link south of US 27 interchange	9,167	11,776	18,184	24,842	34,452	39,853
McArthur Causeway	13,827	16,515	13,377	16,775	13,795	16,898
Venetian Causeway	7,263	8,509	7,790	9,349	7,097	8,734
Julia Tuttle Causeway	24,958	25,241	24,565	24,043	23,993	24,385
Kennedy Causeway	12,829	14,555	13,382	15,277	13,251	14,355
Broad Causeway (96th Street)	8,956	9,811	9,102	10,276	10,152	11,383
Sunny Isles Causeway	9,055	11,010	10,006	9,095	8,763	9,115
Lehman Causeway	7,660	7,535	7,431	8,449	6,796	7,577
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	6,171	5,895	4,895	5,210	5,499	6,316
Hollywood Blvd bridge over the Intracoastal	3,393	3,614	3,575	3,692	3,515	3,547
Sunrise Blvd bridge over the Intracoastal	5,044	5,620	5,162	5,588	5,045	5,478
Oakland Park Blvd bridge over the Intracoastal	4,622	4,915	4,523	4,965	4,630	4,956
NE 14th Street Bridge over the Intracoastal	3,255	3,411	3,332	3,450	3,348	3,595
Hillsboro bridge over the Intracoastal	2,687	2,814	2,884	2,803	2,847	3,002
Altantic Blvd bridge over the Intracoastal	4,298	4,416	4,219	4,332	4,165	4,227
SE 17th Street bridge over the Intracoastal	3,221	3,562	3,978	4,366	4,006	4,407
East Commercial Blvd bridge over the Intracoastal	3,782	3,974	3,892	4,039	3,812	4,020
Sheridan Street bridge over the Intracoastal	2,631	2,770	3,247	3,056	2,661	3,310
Dania Beach Blvd bridge over the Intracoastal	1,484	1,757	1,945	2,310	2,875	2,124
Las Olas bridge over the Intracoastal	2,238	2,559	1,297	1,628	1,329	1,671

Results Specific to Monroe County

2006 Regional Model Results

Evacuation Scenario	Assumptions	Clearance Time (Hours)
2005 Baseline	• Simultaneous evacuation of tourists, mobile home residents and permanent residents • 100% evacuation participation rate for all unit types	35.7 hours
2005 Baseline incorporating Phased Evacuation of Tourists and Mobile Home Residents (Test Scenario 1)	• Only the effect of permanent resident evacuation on clearance time is measured. Tourists and mobile home residents are taken out of the evacuation in accordance with Monroe County's adopted phased evacuation plan. • 100% evacuation participation rate for permanent residents	23.6 hours
Monroe County Phased Evacuation with Miller Model Participation Rates (Test Scenario 8)	• Only permanent resident evacuation is measured • 75% evacuation participation rate for permanent residents	18.2 hours

Miller Model Results

Evacuation Scenario	Clearance Time (Hours)[10]
2005 Baseline	24.04
Phased Evacuation of Tourists Only	20.34
Phased Evacuation of Tourists and Mobile Homes	18.10

[10]Clearance time in the Miller Model is defined as the time it takes all evacuating vehicles to clear the Monroe County line after the first evacuation notice

Comparison with the Miller Model

- Miller Model and SF Regional Model are two separate models. They are built on different base geographies.

- SF Regional Model is based the hurricane evacuation model knowledge, model features and assumptions present in both the Miller Model and the PBS&J 2004 Regional Hurricane Evacuation Model. It has also been shaped by Technical Advisory Team feedback and the best available behavioral studies and socioeconomic data.

- The South Florida Regional Model does include certain assumptions from the Miller Model. However, there are differences between the Miller Model and South Florida Regional Model 3B baseline scenario in the following key variables:

Inputs	South Florida Regional Model (3B)	Miller Model
Evacuation Participation Rates	100% (Cat. 3-5) 62% (Cat. 1-2)	Avg. 75% (Cat 3-5) Avg. 63% (Cat. 1-2)
Vehicle Utilization Rates	80%	70%
US 1 / Card Sound Road Distribution Split	70% / 30%	66% / 33%
High Tourist Occupancy	85%	45% (standard value for all model runs)

Outputs	South Florida Regional Model (3B)	Miller Model
Total Evacuating Vehicles	59,012	41,830
Total Evacuating Vehicles Out of County	59,012	40,904
Total Evacuating Tourist Vehicles	12,236	
Total Evacuating Resident Vehicles	46,776	
Total Evacuating Population	116,428	97,100
Total Evacuating Tourists	33,368	
Total Evacuating Residents	83,060	

Baseline Evacuating Vehicles

Table 29 summarizes total evacuating vehicles by origin by County and by the South Florida Region for each of the six baseline scenarios. It is evident that both tourist occupancy rates and storm severity impact the number of evacuating vehicles. A higher tourist occupancy rate, under the same storm severity, generates more evacuating vehicles than a lower tourist occupancy rate. For example, 38,843 vehicles evacuate Monroe County under Scenario 1A (Category 1-2 storm conditions with a low tourist occupancy rate). However, under the same storm conditions, but with higher tourist occupancy rates, 44,600 vehicles evacuate Monroe County. In this situation, the increase in tourist occupancy rate generates an additional 5,757 vehicles. The more severe the storm conditions, given the same tourist occupancy rate, the more evacuating vehicles there are. This reflects the fact that as storm severity increases more people are directed to evacuate by emergency management officials as well as the fact that under more intense storm threats more people choose to evacuate.

Table 29: Baseline Scenario Outcomes
Summary of Total Evacuating Vehicles by County and by the South Florida Region by Baseline Scenario

County/Region of Origin	Evacuating Vehicles in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	38,843	44,600	53,256	59,012	53,256	59,012
Miami-Dade County	163,844	180,088	225,743	243,186	302,998	321,185
Broward County	110,604	111,521	158,494	164,743	193,189	199,727
South Florida	313,291	336,209	437,493	466,941	549,443	579,924

Baseline Scenario Definitions:

1A Category 1-2 Storm Condtions with Low Tourist Occupancy
1B Category 1-2 Storm Condtions with High Tourist Occupancy
2A Category 3 Storm Condtions with Low Tourist Occupancy
2B Category 3 Storm Condtions with High Tourist Occupancy
3A Category 4-5 Storm Condtions with Low Tourist Occupancy
3B Category 4-5 Storm Condtions with High Tourist Occupancy

Baseline Evacuating Vehicles by Destination

Table 30 represents total evacuating vehicles by destination for the six baseline scenarios. This table enables an understanding of the magnitude of vehicles traveling to different destination types. The largest numbers of evacuees are traveling to Broward County and Miami-Dade County local destinations. Vehicles traveling north out of region are also significant under all storm conditions. This destination receives the third highest flow of evacuees.

Table 30: Baseline Scenario Outcomes
Summary of Total Evacuating Vehicles by Baseline Scenario to Evacuee Destinations

All Evacuee Destinations	Evacuating Vehicles in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County Shelter	1,683	1,740	0	0	0	0
Monroe County Hotel	0	0	0	0	0	0
Monroe County Local Friend/Relative	6,473	6,473	0	0	0	0
Miami-Dade County Shelter	3,685	3,849	11,159	11,334	28,689	29,058
Miami-Dade County Hotel	18,217	21,186	23,659	26,471	28,256	29,978
Miami-Dade County Local Friend/Relative	109,660	110,515	153,690	156,469	178,002	180,984
Broward County Shelter	2,637	2,694	7,624	7,687	17,341	17,471
Broward County Hotel	11,490	13,305	15,396	17,146	19,035	20,510
Broward County Local Friend/Relative	88,150	95,033	125,834	133,456	146,016	154,389
North Out of Region	57,715	65,980	81,234	92,805	106,814	119,330
West Out of Region	13,581	15,434	18,897	21,573	25,290	28,204

These numbers align with several destination choice behavioral assumptions input into the model: that the majority of evacuees in Miami-Dade and Broward County stay close to home and travel to the home of a friend or relative following the "shelter in place" philosophy and that Miami-Dade and Broward County absorb flows of evacuees from the Florida Keys.

2006 South Florida Regional Hurricane Evacuation Model
Summary for All Baseline Scenarios
Summary of Evacuating Vehicles by County of Origin and by Destination

County of Origin / Destination	Evacuating Vehicles in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	**38,843**	**44,600**	**53,256**	**59,012**	**53,256**	**59,012**
Monroe / Shelter	1,683	1,740	0	0	0	0
Monroe / Hotel	0	0	0	0	0	0
Monroe / Local Residence	6,473	6,473	0	0	0	0
Miami-Dade / Shelter	243	243	468	468	468	468
Miami-Dade / Hotel	2,748	3,033	5,002	5,289	5,002	5,289
Miami-Dade / Local Residence	8,001	8,856	14,537	15,400	14,537	15,400
Broward / Shelter	0	0	0	0	0	0
Broward / Hotel	1,534	1,819	2,663	2,951	2,663	2,951
Broward / Local Residence	4,603	5,458	7,988	8,852	7,988	8,852
North Out of Region	11,524	14,431	19,208	22,144	19,208	22,144
West Out of Region	2,034	2,547	3,390	3,908	3,390	3,908
Miami-Dade County	**163,844**	**180,088**	**225,743**	**243,186**	**302,998**	**321,185**
Miami-Dade / Shelter	3,442	3,606	10,691	10,866	28,221	28,590
Miami-Dade / Hotel	13,213	15,897	15,600	17,851	19,162	20,294
Miami-Dade / Local Residence	85,865	85,865	117,754	117,754	134,819	134,819
Broward / Shelter	0	0	0	0	0	0
Broward / Hotel	3,066	3,736	4,085	4,836	6,040	6,874
Broward / Local Residence	27,596	33,624	36,764	43,522	54,358	61,867
North Out of Region	24,530	29,888	32,679	38,686	48,319	54,993
West Out of Region	6,132	7,472	8,170	9,671	12,079	13,748
Broward County	**110,604**	**111,521**	**158,494**	**164,743**	**193,189**	**199,727**
Miami-Dade / Shelter	0	0	0	0	0	0
Miami-Dade / Hotel	2,256	2,256	3,057	3,331	4,092	4,395
Miami-Dade / Local Residence	15,794	15,794	21,399	23,315	28,646	30,765
Broward / Shelter	2,637	2,694	7,624	7,687	17,341	17,471
Broward / Hotel	6,890	7,750	8,648	9,359	10,332	10,685
Broward / Local Residence	55,951	55,951	81,082	81,082	83,670	83,670
North Out of Region	21,661	21,661	29,347	31,975	39,287	42,193
West Out of Region	5,415	5,415	7,337	7,994	9,821	10,548
South Florida	**313,291**	**336,209**	**437,493**	**466,941**	**549,443**	**579,924**
Monroe / Shelter	1,683	1,740	0	0	0	0
Monroe / Hotel	0	0	0	0	0	0
Monroe / Local Residence	6,473	6,473	0	0	0	0
Miami-Dade / Shelter	3,685	3,849	11,159	11,334	28,689	29,058
Miami-Dade / Hotel	18,217	21,186	23,659	26,471	28,256	29,978
Miami-Dade / Local Residence	109,660	110,515	153,690	156,469	178,002	180,984
Broward / Shelter	2,637	2,694	7,624	7,687	17,341	17,471
Broward / Hotel	11,490	13,305	15,396	17,146	19,035	20,510
Broward / Local Residence	88,150	95,033	125,834	133,456	146,016	154,389
North Out of Region	57,715	65,980	81,234	92,805	106,814	119,330
West Out of Region	13,581	15,434	18,897	21,573	25,290	28,204

Baseline Public Shelter and Hotel Room Demand

Tables 31-35 summarize the total evacuating people generated by each of the six baseline scenarios and provide context for these numbers. Table 31 depicts total evacuating people by county and for the South Florida Region (by origin) for each of the six baseline scenarios. There is a significant increase in total number of evacuating people in the South Florida Region from Category 1-2 storm conditions to Category 3 and higher storm conditions. For example, total South Florida evacuating persons under Category 1-2 storm conditions with high tourist occupancy is 696,901. However, this figure increases by 274,146 people to 971,047 total evacuating persons under Category 3 storm conditions, high tourist occupancy.

Table 31: Baseline Scenario Outcomes
Summary of Total Evacuating People by County and by the South Florida Region by Baseline Scenario

County/Region of Origin	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	74,671	90,373	100,726	116,428	100,726	116,428
Miami-Dade County	356,217	378,805	510,188	534,442	729,110	754,390
Broward County	219,402	227,723	312,270	320,177	391,293	400,640
South Florida	650,290	696,901	923,184	971,047	1,221,129	1,271,458

Baseline Scenario Definitions:

1A Category 1-2 Storm Condtions with Low Tourist Occupancy
1B Category 1-2 Storm Condtions with High Tourist Occupancy
2A Category 3 Storm Condtions with Low Tourist Occupancy
2B Category 3 Storm Condtions with High Tourist Occupancy
3A Category 4-5 Storm Condtions with Low Tourist Occupancy
3B Category 4-5 Storm Condtions with High Tourist Occupancy

Table 32 outlines the public shelter demand created under each baseline scenario. It lists how many evacuating people will travel to shelters in each of the respective counties. Under all scenarios, the greatest demand for public shelter space is in Miami-Dade County. Under Category 4-5 storm conditions, high tourist occupancy, 71,358 people are modeled traveling to Miami-Dade County public shelters. Public shelter space demand in Monroe County is nonexistent under Category 3 or high storm conditions because Monroe County does not officially open its shelters for Category 3 or higher storms. The zeros represent the fact that all Keys residents are directed to evacuate and shelter out of county. In the worst case baseline scenario, 3B, public shelter demand does not exceed the maximum shelter space available in Broward and Miami-Dade Counties as specified in the 2006 Statewide Emergency Shelter Plan **(Table 33**).

Table 32: Baseline Scenario Outcomes
Total Public Shelter Demand (in People) by Baseline Scenario

County/Region of Origin	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	3,027	3,184	0	0	0	0
Miami-Dade County	8,355	8,584	26,081	26,329	70,850	71,358
Broward County	5,538	5,621	15,731	15,820	36,304	36,493
Total	16,920	17,389	41,812	42,149	107,154	107,851

Table 33: Year 2006 Category 5 Total Shelter Capacity (in People)	
Broward County	37,135
Miami-Dade County	86,511
Monroe County	N/A

Table 34 encapsulates the demand for hotel rooms created by each baseline scenario. It shows the numbers of evacuating people to hotels in each of the counties. Under all scenarios, the greatest demand for hotel space is in Miami-Dade County. There is not a demand for hotel rooms in Monroe County because all tourists are directed to evacuate out of county under all storm conditions and hotels close to ensure worker safety. **Table 35** presents the total hotel rooms present in each county according to the best available data collected for the Traffic Study. Adequate hotel rooms exist in each county to absorb the arriving evacuees.

Table 34: Baseline Scenario Outcomes Total Hotel Room Demand (in People) by Baseline Scenario						
County/Region of Origin	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	0	0	0	0	0	0
Miami-Dade County	34,060	38,926	46,325	50,633	60,931	63,721
Broward County	20,766	23,699	28,956	30,785	39,169	41,620
Total	54,826	62,625	75,281	81,418	100,100	105,341

Table 35: Total Hotel Capacity (in Rooms)	
Broward County	34,615
Miami-Dade County	49,468
Monroe County	13,086

2006 South Florida Regional Hurricane Evacuation Model
Summary for All Baseline Scenarios
Summary of Evacuating People by County of Origin and by Destination

County of Origin Destination	Evacuating People in Each Baseline Scenario					
	1A	1B	2A	2B	3A	3B
Monroe County	**74,671**	**90,373**	**100,726**	**116,428**	**100,726**	**116,428**
Monroe / Shelter	3,027	3,184	0	0	0	0
Monroe / Hotel	0	0	0	0	0	0
Monroe / Local Residence	11,401	11,401	0	0	0	0
Miami-Dade / Shelter	428	428	831	831	831	831
Miami-Dade / Hotel	5,150	5,927	9,189	9,974	9,189	9,974
Miami-Dade / Local Residence	15,022	17,354	26,737	29,093	26,737	29,093
Broward / Shelter	0	0	0	0	0	0
Broward / Hotel	3,012	3,789	5,036	5,821	5,036	5,821
Broward / Local Residence	9,036	11,368	15,109	17,464	15,109	17,464
North Out of Region	23,456	31,384	37,250	45,258	37,250	45,258
West Out of Region	4,139	5,538	6,574	7,987	6,574	7,987
Miami-Dade County	**356,217**	**378,805**	**510,188**	**534,442**	**729,110**	**754,390**
Miami-Dade / Shelter	7,927	8,156	25,250	25,498	70,019	70,527
Miami-Dade / Hotel	24,766	28,504	31,481	34,613	43,878	45,450
Miami-Dade / Local Residence	199,732	199,732	280,971	280,971	339,522	339,522
Broward / Shelter	0	0	0	0	0	0
Broward / Hotel	6,190	7,121	8,624	9,668	13,785	14,945
Broward / Local Residence	55,706	64,086	77,619	87,012	124,061	134,501
North Out of Region	49,517	56,965	68,995	77,344	110,276	119,556
West Out of Region	12,379	14,241	17,248	19,336	27,569	29,889
Broward County	**219,402**	**227,723**	**312,270**	**320,177**	**391,293**	**400,640**
Miami-Dade / Shelter	0	0	0	0	0	0
Miami-Dade / Hotel	4,144	4,495	5,655	6,046	7,864	8,297
Miami-Dade / Local Residence	29,009	31,464	39,584	42,320	55,050	58,078
Broward / Shelter	5,538	5,621	15,731	15,820	36,304	36,493
Broward / Hotel	11,564	12,789	15,296	15,296	20,348	20,854
Broward / Local Residence	119,417	119,417	168,147	168,147	177,356	177,356
North Out of Region	39,784	43,150	54,286	58,039	75,497	79,650
West Out of Region	9,946	10,787	13,571	14,509	18,874	19,912
South Florida	**650,290**	**696,901**	**923,184**	**971,047**	**1,221,129**	**1,271,458**
Monroe / Shelter	3,027	3,184	0	0	0	0
Monroe / Hotel	0	0	0	0	0	0
Monroe / Local Residence	11,401	11,401	0	0	0	0
Miami-Dade / Shelter	8,355	8,584	26,081	26,329	70,850	71,358
Miami-Dade / Hotel	34,060	38,926	46,325	50,633	60,931	63,721
Miami-Dade / Local Residence	243,763	248,550	347,292	352,384	421,309	426,693
Broward / Shelter	5,538	5,621	15,731	15,820	36,304	36,493
Broward / Hotel	20,766	23,699	28,956	30,785	39,169	41,620
Broward / Local Residence	184,159	194,871	260,875	272,623	316,526	329,321
North Out of Region	112,757	131,499	160,531	180,641	223,023	244,464
West Out of Region	26,464	30,566	37,393	41,832	53,017	57,788

Appendix 7: Test Scenario Results

2006 South Florida Regional Hurricane Evacuation Traffic Study
Test Scenario Results

Introduction

The value of the user model, one of the principal products of the 2006 South Florida Regional Hurricane Evacuation Traffic Study, is that it facilitates the testing of alternative hurricane evacuation scenarios. The user model enables a user to change the baseline scenario inputs to accommodate different evacuation circumstances. It then generates outcomes based on the alternative circumstances and compares these results to the baseline scenario results. Because the user model can analyze an extensive variety of hurricane evacuation scenarios, it can provide a greater breadth of information to decision-makers about possible hurricane evacuation scenario outcomes.

Eight distinct alternative evacuation scenarios were tested with the user model as part of the 2006 Traffic Study. These test scenarios were formulated based on input from the Technical Advisory Team. The first seven scenarios test one distinct alternative hurricane evacuation circumstance in order to analyze how the resulting changes to one specific model input (vehicle usage rates, participation rates, unit counts) affect model outcomes. The user model is also capable of modeling changes to multiple variables in the same test scenario, as presented in Test Scenario 8.

Test Scenario Summary

Eight test scenarios were run for the South Florida Regional Model to evaluate the impacts to the baseline model associated with changes to some of the variables. The test scenarios included:

- Test Scenario 1- Monroe County's adopted phased evacuation, which includes an approximately 48-hour advance evacuation for tourists and an approximately 36-hour advance evacuation for mobile homes. To reflect this situation, the evacuation participation rates for tourists and mobile homes are modified to 0%.

- Test Scenario 2 – Includes an average evacuation participation rate of 62% for Monroe County (as presented in Hurricane Ivan and Hurricane George behavioral studies) in place of the policy assumption of 100% used in the SF Regional Model.

- Test Scenario 3 - Utilizes the average vehicle usage rates in the Miller Model of 70% versus the 80% rate used in the SF Regional Model.

- Test Scenario 4 – Assumes that with improvements to the Card Sound Road intersection at Ocean Reef, the vehicle capacity (service volume) on Card Sound Road will be increased to 1350 vphl.

- Test Scenario 5 – Includes population estimates from the U.S. Census Bureau that indicate a 4.1% decrease in population in the Keys. The decrease is applied to mobile homes and permanent dwelling units uniformly throughout the Keys.

- Test Scenario 6 - Includes population estimates from the University of Florida Bureau of Economic and Business Research that indicate a 3.55% Florida Keys population increase. The increase was applied to mobile homes and permanent dwelling units uniformly throughout the Keys.

- Test Scenario 7 – Increase in inland area evacuation participation rates to simulate a hurricane making landfall on the west coast and traveling eastward across South Florida.

- Test Scenario 8 – Monroe County's adopted phased evacuation including an approximately 48-hour advance evacuation for tourists and an approximately 36-hour advanced evacuation for mobile homes combined with participation rates (75%) for the Keys equivalent to those presented in the Miller Model.

Test Scenario Clearance Time Summary Table

South Florida Regional Hurricane Evacuation Traffic Study: Test Scenario Clearance Times (Hours)									
Regional Roadways	Baseline	Test 1: Monroe County Phased Evacuation	Test 2: Monroe County Participation Rates based on Behavioral Studies	Test 3: Miller Model Vehicle Usage Rates	Test 4: Increased Card Sound Road Capacity	Test 5: Census Estimated Population Decrease	Test 6: BEBR Estimated Population Increase	Test 7: Hurricane making landfall on west coast	Test 8: Monroe County Phased Evacuation with Miller Model Participation Rates
I-95	9.9	9.3	9.6	9.7	9.9	9.8	9.9	12.7	9.1
Florida's Turnpike	22.1	20.5	21.3	21.8	22.1	22.0	22.2	29.0	19.9
US 27	3.4	3.4	3.4	3.4	3.4	3.4	3.4	4.1	3.4
I-75	8.5	8.2	8.4	8.5	8.5	8.5	8.6	11.1	8.1
US 41	9.7	9.0	9.3	9.5	9.7	9.7	9.8	11.8	8.7
Monroe County	35.7	23.6	27.4	32.3	35.7	34.6	36.6	35.7	18.2
Miami-Dade County	28.4	19.8	22.5	26.0	28.4	27.6	29.1	28.4	16.0
Broward County	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2

Additional Test Scenario Summary Tables[11]

Table 1: Test Scenario Outcomes Summary Summary of Total Evacuating Vehicles by County and by the South Florida Region									
County/Region of Origin	Evacuating Vehicles in Each Test Scenario								
	3B	T1	T2	T3	T4	T5	T6	T7	T8
Monroe County	59,012	37,925	44,600	53,165	59,012	57,100	60,668	59,012	28,445
Miami-Dade County	321,185	321,185	321,185	321,185	321,185	321,185	321,185	456,990	321,185
Broward County	199,727	199,727	199,727	199,727	199,727	199,727	199,727	333,957	199,727
South Florida	579,924	558,837	565,512	574,077	579,924	578,012	581,580	849,959	549,357

Table 2: Test Scenario Outcomes Summary Summary of Total Evacuating People by County and by the South Florida Region									
County/Region of Origin	Evacuating People in Each Test Scenario								
	3B	T1	T2	T3	T4	T5	T6	T7	T8
Monroe County	116,428	68,569	90,372	116,428	116,428	113,027	119,372	116,428	51,426
Miami-Dade County	754,390	754,390	754,390	754,390	754,390	754,390	754,390	1,129,521	754,390
Broward County	400,640	400,640	400,640	400,640	400,640	400,640	400,640	710,265	400,640
South Florida	1,271,458	1,223,599	1,245,402	1,271,458	1,271,458	1,268,057	1,274,402	1,956,214	1,206,456

Table 3: Test Scenario Outcomes Summary Total Public Shelter Demand (in People) by Test Scenario									
County/Region of Origin	Evacuating People in Each Test Scenario								
	3B	T1	T2	T3	T4	T5	T6	T7	T8
Monroe County	0	0	0	0	0	0	0	0	0
Miami-Dade County	71,358	71,213	71,097	71,358	71,358	71,324	71,387	108,871	71,041
Broward County	36,493	36,493	36,493	36,493	36,493	36,493	36,493	67,459	36,493
Total	107,851	107,706	107,590	107,851	107,851	107,817	107,880	176,330	107,534

Table 4: Test Scenario Outcomes Summary Total Hotel Room Demand (in People) by Test Scenario									
County/Region of Origin	Evacuating People in Each Test Scenario								
	3B	T1	T2	T3	T4	T5	T6	T7	T8
Monroe County	0	0	0	0	0	0	0	0	0
Miami-Dade County	63,721	60,604	61,116	63,721	63,721	63,318	64,016	87,896	58,890
Broward County	41,620	39,227	40,318	41,620	41,620	41,450	41,768	63,665	38,370
Total	105,341	99,831	101,434	105,341	105,341	104,768	105,784	151,561	97,260

Table 5: Year 2006 Category 5 Total Shelter Capacity (in People)	
Broward County	37,135
Miami-Dade County	86,511
Monroe County	N/A

Table 6: Total Hotel Capacity (in Rooms)	
Broward County	34,615
Miami-Dade County	49,468
Monroe County	13,086

[11] These summary tables compare the results from each test scenario, produced under the worst case regional hurricane evacuation conditions, to the baseline 3B scenario (worst case scenario) results. For a full summary of all test scenario results produced under a range of hurricane conditions, please refer to the summary tabs at the end of each test scenario Excel file on the project CD. Table 5 and Table 6 show the total shelter and hotel capacity available in each South Florida county for comparison purposes.

Test Scenario 1: Monroe County Staged Evacuation

	Baseline Clearance Times[12]	Change from Baseline Clearance Times	Test Scenario 1 Clearance Times
Regional Roadways			
I-95	9.9	-0.6	9.3
Florida's Turnpike	22.1	-1.6	20.5
US 27	3.4	0	3.4
I-75	8.5	-0.3	8.2
US 41	9.7	-0.7	9.0
Monroe County	35.7	-12.1	23.6
Miami-Dade County	28.4	-8.6	19.8
Broward County	6.2	0	6.2

Description: Test Scenario 1 is designed to represent the staged evacuation process adopted by Monroe County. Staged evacuation requires that all tourists evacuate approximately 48 hours in advance of tropical storm winds; that all mobile home residents evacuate approximately 36 hours prior to tropical storm winds and that all Keys residents begin a phased evacuation approximately 30 hours in advance of tropical storm winds. This process is designed to facilitate the exit of all tourists and mobile home residents from the Keys before the permanent resident evacuation begins.

User Model Adjustments: Because tourist and mobile home units have exited out of the Keys before permanent residents in a staged evacuation, it was assumed, in this simulation, that tourist unit and mobile home units would not be part of the evacuation scenario. Participation rates for tourist units and mobile home units were reduced to 0% in the user model (in the "MoBehav"- Monroe County Behavioral Inputs tab) under all storm conditions.

Results: Test Scenario 1 results in a reduction in Monroe County and Miami-Dade County clearance times. Monroe County clearance time decreases by 12.1 hours on its most critical link, the Snake Creek Bridge, and Miami-Dade County clearance time declines by 8.6 hours on its most critical link, US 1 through Florida City. Clearance time on Florida's Turnpike out of the region also decreases by 1.6 hours.

[12]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 1
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 1					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.5**	**5.8**	**7.0**	**7.5**	**8.7**	**9.3**
Florida Turnpike northbound out of Region	**10.7**	**11.7**	**14.6**	**16.0**	**18.9**	**20.5**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.0**	**5.2**	**6.2**	**6.7**	**7.7**	**8.2**
US 41 westbound out of Region	**5.1**	**5.7**	**6.6**	**7.2**	**8.2**	**9.0**
Monroe County Critical Links						
Snake Creek Bridge	**12.0**	**12.0**	**23.5**	**23.6**	**23.5**	**23.6**
US 1 18-mile stretch out of the Florida Keys	**11.3**	**11.3**	**21.9**	**21.9**	**21.9**	**21.9**
Northbound Card Sound Road before Ocean Reef	**11.9**	**11.9**	**23.4**	**23.4**	**23.4**	**23.4**
Miami-Dade County Critical Links						
US 1 through Florida City	**6.8**	**8.3**	**14.4**	**18.4**	**18.6**	**19.8**
Northbound ramp from US 1 to the HEFT	**6.1**	**6.2**	**11.7**	**13.9**	**15.9**	**16.9**
Krome Avenue link through downtown Homestead	**4.3**	**4.5**	**6.8**	**4.9**	**5.6**	**7.1**
HEFT link north of the SW 312 Street interchange	**4.0**	**4.0**	**7.0**	**8.1**	**9.7**	**10.3**
Krome Avenue link north of Quail Roost Drive	**3.7**	**4.9**	**8.6**	**10.0**	**6.9**	**8.1**
HEFT link north of the SW 137th Avenue interchange	**4.1**	**4.1**	**7.2**	**8.4**	**10.7**	**11.4**
HEFT link north of the SW 112th Avenue interchange	**3.9**	**4.1**	**7.3**	**8.5**	**11.3**	**11.6**
HEFT link north of Coral Reef Road interchange	**4.0**	**3.8**	**6.2**	**7.3**	**12.0**	**12.5**
HEFT link south of US 27 interchange	**3.7**	**4.0**	**6.0**	**7.0**	**10.1**	**10.9**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 1
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	-0.3	-0.5	-0.3	-0.6	-0.3	-0.6
Florida Turnpike northbound out of Region	-1.0	-1.5	-1.1	-1.7	-1.1	-1.6
US 27 northbound out of Region	0.0	0.0	0.0	0.0	0.0	0.0
I-75 west/northbound out of Region	-0.2	-0.3	-0.2	-0.3	-0.2	-0.3
US 41 westbound out of Region	-0.5	-0.7	-0.5	-0.8	-0.6	-0.7
Monroe County Critical Links						
Snake Creek Bridge	-7.4	-10.7	-8.8	-12.1	-8.8	-12.1
US 1 18-mile stretch out of the Florida Keys	-6.9	-9.9	-8.1	-11.1	-8.1	-11.1
Northbound Card Sound Road before Ocean Reef	-7.4	-10.6	-8.6	-11.9	-8.6	-11.9
Miami-Dade County Critical Links						
US 1 through Florida City	-3.4	-6.3	-4.8	-8.5	-5.8	-8.6
Northbound ramp from US 1 to the HEFT	-2.9	-4.1	-3.6	-6.1	-4.8	-7.0
Krome Avenue link through downtown Homestead	-1.5	-2.4	-1.6	-1.4	-1.1	-2.4
HEFT link north of the SW 312 Street interchange	-1.3	-1.9	-1.6	-2.8	-2.2	-3.2
Krome Avenue link north of Quail Roost Drive	-0.7	-2.2	-1.9	-3.2	-1.1	-1.6
HEFT link north of the SW 137th Avenue interchange	-1.3	-1.9	-1.7	-2.8	-2.2	-3.2
HEFT link north of the SW 112th Avenue interchange	-1.2	-1.8	-1.6	-2.7	-2.2	-3.1
HEFT link north of Coral Reef Road interchange	-1.1	-1.3	-1.1	-1.9	-1.6	-2.3
HEFT link south of US 27 interchange	-0.8	-1.2	-1.0	-1.8	-1.4	-2.1
McArthur Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Venetian Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Julia Tuttle Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Kennedy Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broad Causeway (96th Street)	0.0	0.0	0.0	0.0	0.0	0.0
Sunny Isles Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Lehman Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hollywood Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sunrise Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Oakland Park Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
NE 14th Street Bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hillsboro bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Altantic Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
SE 17th Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
East Commercial Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sheridan Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Dania Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Las Olas bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 2: Monroe County Participation Rates from Behavioral Studies

	Baseline Clearance Times[13]	Change from Baseline Clearance Times	Test Scenario 2 Clearance Times
Regional Roadways			
I-95	9.9	-0.3	9.6
Florida's Turnpike	22.1	-0.8	21.3
US 27	3.4	0	3.4
I-75	8.5	-0.1	8.4
US 41	9.7	-0.4	9.3
Monroe County	35.7	-8.3	27.4
Miami-Dade County	28.4	-5.9	22.5
Broward County	6.2	0	6.2

Description: Test Scenario 2 is formulated to capture a situation that reflects the participation rates of Monroe County residents during Category 3-5 hurricane evacuations, as documented in available behavioral studies.

User Model Adjustments: The average Monroe County resident participation rate for hurricane evacuations documented in the PBS&J Hurricane Georges Assessment, 1999, and in the Hurricane Ivan FEMA Post-Storm Assessment, 2005, is 62%. This value is reflected under Category 1-2 storm conditions for the six baseline scenarios. To model this test scenario, participation rates for permanent units were reduced to 62% in the user model (in the "MoBehav"- Monroe County Behavioral Inputs tab) under all storm conditions.

Results: Test Scenario 2 results in a reduction in Monroe County and Miami-Dade County clearance times. Monroe County clearance time decreases by 8.3 hours on its most critical link, the Snake Creek Bridge, and Miami-Dade County clearance time declines by 5.9 hours on its most critical link, US 1 through Florida City. Clearance time on Florida's Turnpike out of the region also decreases by 0.8 hours.

[13]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 2
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 2					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.8**	**6.3**	**7.0**	**7.8**	**8.7**	**9.6**
Florida Turnpike northbound out of Region	**11.7**	**13.2**	**14.8**	**16.8**	**19.1**	**21.3**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.2**	**5.5**	**6.2**	**6.8**	**7.7**	**8.4**
US 41 westbound out of Region	**5.6**	**6.4**	**6.7**	**7.6**	**8.4**	**9.3**
Monroe County Critical Links						
Snake Creek Bridge	**19.4**	**22.7**	**24.1**	**27.4**	**24.1**	**27.4**
US 1 18-mile stretch out of the Florida Keys	**18.2**	**21.2**	**22.4**	**25.4**	**22.4**	**25.4**
Northbound Card Sound Road before Ocean Reef	**19.3**	**22.5**	**23.9**	**27.1**	**23.9**	**27.1**
Miami-Dade County Critical Links						
US 1 through Florida City	**10.2**	**14.6**	**14.7**	**21.1**	**18.9**	**22.5**
Northbound ramp from US 1 to the HEFT	**9.0**	**10.3**	**11.9**	**15.8**	**16.2**	**19.1**
Krome Avenue link through downtown Homestead	**5.8**	**6.9**	**6.9**	**5.4**	**5.6**	**7.8**
HEFT link north of the SW 312 Street interchange	**5.3**	**5.9**	**7.1**	**9.0**	**9.9**	**11.3**
Krome Avenue link north of Quail Roost Drive	**4.4**	**7.1**	**8.7**	**11.0**	**6.9**	**8.6**
HEFT link north of the SW 137th Avenue interchange	**5.4**	**6.0**	**7.3**	**9.3**	**10.9**	**12.4**
HEFT link north of the SW 112th Avenue interchange	**5.1**	**5.9**	**7.4**	**9.4**	**11.4**	**12.6**
HEFT link north of Coral Reef Road interchange	**5.1**	**5.1**	**6.2**	**7.9**	**12.1**	**13.2**
HEFT link south of US 27 interchange	**4.5**	**5.2**	**6.0**	**7.6**	**10.2**	**11.6**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 2
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	0.0	0.0	-0.3	-0.3	-0.3	-0.3
Florida Turnpike northbound out of Region	0.0	0.0	-0.9	-0.9	-0.9	-0.8
US 27 northbound out of Region	0.0	0.0	0.0	0.0	0.0	0.0
I-75 west/northbound out of Region	0.0	0.0	-0.2	-0.2	-0.2	-0.1
US 41 westbound out of Region	0.0	0.0	-0.4	-0.4	-0.4	-0.4
Monroe County Critical Links						
Snake Creek Bridge	0.0	0.0	-8.2	-8.3	-8.2	-8.3
US 1 18-mile stretch out of the Florida Keys	0.0	0.0	-7.6	-7.6	-7.6	-7.6
Northbound Card Sound Road before Ocean Reef	0.0	0.0	-8.1	-8.2	-8.1	-8.2
Miami-Dade County Critical Links						
US 1 through Florida City	0.0	0.0	-4.5	-5.8	-5.5	-5.9
Northbound ramp from US 1 to the HEFT	0.0	0.0	-3.4	-4.2	-4.5	-4.8
Krome Avenue link through downtown Homestead	0.0	0.0	-1.5	-0.9	-1.1	-1.7
HEFT link north of the SW 312 Street interchange	0.0	0.0	-1.5	-1.9	-2.0	-2.2
Krome Avenue link north of Quail Roost Drive	0.0	0.0	-1.8	-2.2	-1.1	-1.1
HEFT link north of the SW 137th Avenue interchange	0.0	0.0	-1.6	-1.9	-2.0	-2.2
HEFT link north of the SW 112th Avenue interchange	0.0	0.0	-1.5	-1.8	-2.1	-2.1
HEFT link north of Coral Reef Road interchange	0.0	0.0	-1.1	-1.3	-1.5	-1.6
HEFT link south of US 27 interchange	0.0	0.0	-1.0	-1.2	-1.3	-1.4
McArthur Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Venetian Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Julia Tuttle Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Kennedy Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broad Causeway (96th Street)	0.0	0.0	0.0	0.0	0.0	0.0
Sunny Isles Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Lehman Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hollywood Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sunrise Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Oakland Park Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
NE 14th Street Bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hillsboro bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Altantic Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
SE 17th Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
East Commercial Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sheridan Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Dania Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Las Olas bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 3: Miller Model Vehicle Usage Rates

	Baseline Clearance Times[14]	Change from Baseline Clearance Times	Test Scenario 3 Clearance Times
Regional Roadways			
I-95	9.9	-0.2	9.7
Florida's Turnpike	22.1	-0.3	21.8
US 27	3.4	0	3.4
I-75	8.5	0	8.5
US 41	9.7	-0.2	9.5
Monroe County	35.7	-3.4	32.3
Miami-Dade County	28.4	-2.4	26
Broward County	6.2	0	6.2

Description: The permanent occupied unit vehicle usage rate (80%) used to configure the Traffic Study's baseline scenarios was taken from the PBS&J regional hurricane evacuation model, which served as the starting point for the 2006 South Florida Regional Hurricane Evacuation Traffic Study. This percentage is slightly higher than vehicle usage rate used in the Miller Model, which averages 70%. Test Scenario 3 reflects the Miller Model values.

User Model Adjustments: The vehicle usage rate for mobile homes and permanent occupied units was adjusted down from 80% to 70% in the user model (on the "MoBehav"- Monroe County Behavioral Inputs tab) under all storm conditions.

Results: Test Scenario 3 results in a reduction in Monroe County and Miami-Dade County clearance times. Monroe County clearance time decreases by 3.4 hours on its most critical link, the Snake Creek Bridge, and Miami-Dade County clearance time declines by 2.4 hours on its most critical link, US 1 through Florida City.

[14]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 3
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 3					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.7**	**6.3**	**7.2**	**8.0**	**8.9**	**9.7**
Florida Turnpike northbound out of Region	**11.5**	**13.0**	**15.3**	**17.3**	**19.6**	**21.8**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.1**	**5.5**	**6.3**	**6.9**	**7.8**	**8.5**
US 41 westbound out of Region	**5.5**	**6.3**	**6.9**	**7.8**	**8.6**	**9.5**
Monroe County Critical Links						
Snake Creek Bridge	**17.6**	**21.0**	**28.9**	**32.3**	**28.9**	**32.3**
US 1 18-mile stretch out of the Florida Keys	**16.6**	**19.6**	**26.9**	**30.0**	**26.9**	**30.0**
Northbound Card Sound Road before Ocean Reef	**17.6**	**20.8**	**28.7**	**32.0**	**28.7**	**32.0**
Miami-Dade County Critical Links						
US 1 through Florida City	**9.4**	**13.5**	**17.3**	**24.5**	**22.2**	**26.0**
Northbound ramp from US 1 to the HEFT	**8.3**	**9.6**	**13.9**	**18.3**	**18.8**	**22.0**
Krome Avenue link through downtown Homestead	**5.5**	**6.5**	**7.8**	**5.9**	**6.3**	**8.8**
HEFT link north of the SW 312 Street interchange	**5.0**	**5.6**	**8.0**	**10.1**	**11.1**	**12.6**
Krome Avenue link north of Quail Roost Drive	**4.2**	**6.8**	**9.8**	**12.3**	**7.6**	**9.3**
HEFT link north of the SW 137th Avenue interchange	**5.1**	**5.7**	**8.2**	**10.4**	**12.1**	**13.7**
HEFT link north of the SW 112th Avenue interchange	**4.8**	**5.6**	**8.3**	**10.5**	**12.6**	**13.8**
HEFT link north of Coral Reef Road interchange	**4.8**	**4.9**	**6.9**	**8.7**	**13.0**	**14.2**
HEFT link south of US 27 interchange	**4.3**	**5.0**	**6.6**	**8.3**	**11.0**	**12.4**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 3
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	-0.1	0.0	-0.1	-0.1	-0.1	-0.2
Florida Turnpike northbound out of Region	-0.2	-0.2	-0.4	-0.4	-0.4	-0.3
US 27 northbound out of Region	0.0	0.0	0.0	0.0	0.0	0.0
I-75 west/northbound out of Region	-0.1	0.0	-0.1	-0.1	-0.1	0.0
US 41 westbound out of Region	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
Monroe County Critical Links						
Snake Creek Bridge	-1.8	-1.7	-3.4	-3.4	-3.4	-3.4
US 1 18-mile stretch out of the Florida Keys	-1.6	-1.6	-3.1	-3.0	-3.1	-3.0
Northbound Card Sound Road before Ocean Reef	-1.7	-1.7	-3.3	-3.3	-3.3	-3.3
Miami-Dade County Critical Links						
US 1 through Florida City	-0.8	-1.1	-1.9	-2.4	-2.2	-2.4
Northbound ramp from US 1 to the HEFT	-0.7	-0.7	-1.4	-1.7	-1.9	-1.9
Krome Avenue link through downtown Homestead	-0.3	-0.4	-0.6	-0.4	-0.4	-0.7
HEFT link north of the SW 312 Street interchange	-0.3	-0.3	-0.6	-0.8	-0.8	-0.9
Krome Avenue link north of Quail Roost Drive	-0.2	-0.3	-0.7	-0.9	-0.4	-0.4
HEFT link north of the SW 137th Avenue interchange	-0.3	-0.3	-0.7	-0.8	-0.8	-0.9
HEFT link north of the SW 112th Avenue interchange	-0.3	-0.3	-0.6	-0.7	-0.9	-0.9
HEFT link north of Coral Reef Road interchange	-0.3	-0.2	-0.4	-0.5	-0.6	-0.6
HEFT link south of US 27 interchange	-0.2	-0.2	-0.4	-0.5	-0.5	-0.6
McArthur Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Venetian Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Julia Tuttle Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Kennedy Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broad Causeway (96th Street)	0.0	0.0	0.0	0.0	0.0	0.0
Sunny Isles Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Lehman Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hollywood Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sunrise Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Oakland Park Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
NE 14th Street Bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hillsboro bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Altantic Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
SE 17th Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
East Commercial Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sheridan Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Dania Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Las Olas bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 4: Card Sound Road Capacity of 1350

	Baseline Clearance Times[15]	Change from Baseline Clearance Times	Test Scenario 4 Clearance Times
Regional Roadways			
I-95	9.9	0	9.9
Florida's Turnpike	22.1	0	22.1
US 27	3.4	0	3.4
I-75	8.5	0	8.5
US 41	9.7	0	9.7
Monroe County	35.7	0	35.7
Miami-Dade County	28.4	0	28.4
Broward County	6.2	0	6.2

Description: The Monroe County roadway capacities used in the 2006 South Florida Regional Hurricane Evacuation Traffic Study are taken from the Miller Model. The Miller Model includes two different roadway capacities for the two segments of Card Sound Road. From the point where Card Sound Road splits off from US 1 in Key Largo to the sharp intersection where Card Sound Road curves to the west at Ocean Reef, the roadway capacity is 600 vehicles/hour/lane. From Ocean Reef to the point where Card Sound Road reconnects with US 1, the roadway capacity is 1350 vehicles/hour/lane. This test scenario looks at the possibility of the entire extent of Card Sound Road having a roadway capacity of 1350 vehicles/hour/lane.

(Note: The user model allocates 30% of all Monroe County evacuation traffic onto Card Sound Road.)

User Model Adjustments: The roadway capacity for Card Sound Road (listed on the Clearance Times tab) in the user model was changed to 1350 vehicles/hour/lane.

Results: Test Scenario 4 does not affect final clearance times. Snake Creek Bridge remains Monroe County's most critical link and continues to determine its clearance time. However, Test Scenario 4 does result in a significantly reduced volume-to-capacity ratio for Card Sound Road during a worst case scenario regional hurricane evacuation. In the worst case scenario, Card Sound Road's clearance time drops by 18.5 hours down to 16.8 hours (from 35.3 hours).

[15]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 4
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 4					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.8**	**6.3**	**7.3**	**8.1**	**9.0**	**9.9**
Florida Turnpike northbound out of Region	**11.7**	**13.2**	**15.7**	**17.7**	**20.0**	**22.1**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.2**	**5.5**	**6.4**	**7.0**	**7.9**	**8.5**
US 41 westbound out of Region	**5.6**	**6.4**	**7.1**	**8.0**	**8.8**	**9.7**
Monroe County Critical Links						
Snake Creek Bridge	**19.4**	**22.7**	**32.3**	**35.7**	**32.3**	**35.7**
US 1 18-mile stretch out of the Florida Keys	**18.2**	**21.2**	**30.0**	**33.0**	**30.0**	**33.0**
Northbound Card Sound Road before Ocean Reef	**9.7**	**11.1**	**15.3**	**16.8**	**15.3**	**16.8**
Miami-Dade County Critical Links						
US 1 through Florida City	**10.2**	**14.6**	**19.2**	**26.9**	**24.4**	**28.4**
Northbound ramp from US 1 to the HEFT	**9.0**	**10.3**	**15.3**	**20.0**	**20.7**	**23.9**
Krome Avenue link through downtown Homestead	**5.8**	**6.9**	**8.4**	**6.3**	**6.7**	**9.5**
HEFT link north of the SW 312 Street interchange	**5.3**	**5.9**	**8.6**	**10.9**	**11.9**	**13.5**
Krome Avenue link north of Quail Roost Drive	**4.4**	**7.1**	**10.5**	**13.2**	**8.0**	**9.7**
HEFT link north of the SW 137th Avenue interchange	**5.4**	**6.0**	**8.9**	**11.2**	**12.9**	**14.6**
HEFT link north of the SW 112th Avenue interchange	**5.1**	**5.9**	**8.9**	**11.2**	**13.5**	**14.7**
HEFT link north of Coral Reef Road interchange	**5.1**	**5.1**	**7.3**	**9.2**	**13.6**	**14.8**
HEFT link south of US 27 interchange	**4.5**	**5.2**	**7.0**	**8.8**	**11.5**	**13.0**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 4
Critical Links Analysis

Critical Links	Service Volumes on Specific Links				Background Factor
	Q1	Q2	Q3	Q4	
Regional Routes out of South Florida					
I-95 northbound out of Region	6,330	5,824	5,381	6,330	2.0
Florida Turnpike northbound out of Region	4,100	3,772	3,485	4,100	2.0
US 27 northbound out of Region	1,740	1,601	1,479	1,740	2.0
I-75 west/northbound out of Region	4,100	3,772	3,485	4,100	2.0
US 41 westbound out of Region	656	604	558	656	2.0
Monroe County Critical Links					
Snake Creek Bridge	1,350	1,242	1,148	1,350	2.0
US 1 18-mile stretch out of the Florida Keys	1,500	1,380	1,275	1,500	2.0
Northbound Card Sound Road before Ocean Reef	1,350	1,242	1,148	1,350	2.0
Miami-Dade County Critical Links					
US 1 through Florida City	1,800	1,656	1,530	1,800	2.0
Northbound ramp from US 1 to the HEFT	1,800	1,656	1,530	1,800	2.0
Krome Avenue link through downtown Homestead	720	662	612	720	2.0
HEFT link north of the SW 312 Street interchange	3,980	3,662	3,383	3,980	2.0
Krome Avenue link north of Quail Roost Drive	720	662	612	720	2.0
HEFT link north of the SW 137th Avenue interchange	3,980	3,662	3,383	3,980	2.0
HEFT link north of the SW 112th Avenue interchange	4,100	3,772	3,485	4,100	2.0
HEFT link north of Coral Reef Road interchange	6,270	5,768	5,330	6,270	2.0
HEFT link south of US 27 interchange	4,100	3,772	3,485	4,100	2.0
McArthur Causeway	2,610	2,401	2,219	2,610	2.0
Venetian Causeway	1,653	1,521	1,405	1,653	2.0
Julia Tuttle Causeway	6,270	5,768	5,330	6,270	2.0
Kennedy Causeway	2,730	2,512	2,321	2,730	2.0
Broad Causeway (96th Street)	1,350	1,242	1,148	1,350	2.0
Sunny Isles Causeway	3,520	3,238	2,992	3,520	2.0
Lehman Causeway	5,550	5,106	4,718	5,550	2.0
Broward County Critical Links					
Hallandale Beach Blvd bridge over the Intracoastal	1,820	1,674	1,547	1,820	2.0
Hollywood Blvd bridge over the Intracoastal	1,500	1,380	1,275	1,500	2.0
Sunrise Blvd bridge over the Intracoastal	2,275	2,093	1,934	2,275	2.0
Oakland Park Blvd bridge over the Intracoastal	1,517	1,395	1,289	1,517	2.0
NE 14th Street Bridge over the Intracoastal	1,820	1,674	1,547	1,820	2.0
Hillsboro bridge over the Intracoastal	1,330	1,224	1,131	1,330	2.0
Altantic Blvd bridge over the Intracoastal	1,820	1,674	1,547	1,820	2.0
SE 17th Street bridge over the Intracoastal	1,517	1,395	1,289	1,517	2.0
East Commercial Blvd bridge over the Intracoastal	1,083	997	921	1,083	2.0
Sheridan Street bridge over the Intracoastal	1,800	1,656	1,530	1,800	2.0
Dania Beach Blvd bridge over the Intracoastal	1,450	1,334	1,233	1,450	2.0
Las Olas bridge over the Intracoastal	1,517	1,395	1,289	1,517	2.0

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 4
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Florida Turnpike northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
US 27 northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
I-75 west/northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
US 41 westbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Monroe County Critical Links						
Snake Creek Bridge	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
US 1 18-mile stretch out of the Florida Keys	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Northbound Card Sound Road before Ocean Reef	**-9.6**	**-11.4**	**-16.7**	**-18.5**	**-16.7**	**-18.5**
Miami-Dade County Critical Links						
US 1 through Florida City	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Northbound ramp from US 1 to the HEFT	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Krome Avenue link through downtown Homestead	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEFT link north of the SW 312 Street interchange	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Krome Avenue link north of Quail Roost Drive	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEFT link north of the SW 137th Avenue interchange	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEFT link north of the SW 112th Avenue interchange	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEFT link north of Coral Reef Road interchange	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
HEFT link south of US 27 interchange	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
McArthur Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Venetian Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Julia Tuttle Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Kennedy Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Broad Causeway (96th Street)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sunny Isles Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lehman Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Hollywood Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sunrise Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Oakland Park Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
NE 14th Street Bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Hillsboro bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Altantic Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
SE 17th Street bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
East Commercial Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sheridan Street bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dania Beach Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Las Olas bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 5: U.S. Census Bureau Population Estimates

	Baseline Clearance Times[16]	Change from Baseline Clearance Times	Test Scenario 5 Clearance Times
Regional Roadways			
I-95	9.9	-0.1	9.8
Florida's Turnpike	22.1	-0.1	22.0
US 27	3.4	0	3.4
I-75	8.5	0	8.5
US 41	9.7	0	9.7
Monroe County	35.7	-1.1	34.6
Miami-Dade County	28.4	-0.8	27.6
Broward County	6.2	0	6.2

Description: There are two recognized annual population estimate sources for Monroe County: the U.S. Census Bureau and the Bureau of Economic and Business Research at the University of Florida. Both of these entities use an estimation methodology to project population change since the 2000 Census. The 2000-2005 datasets from each of these entities indicate opposite trends; BEBR data indicates a population increase in Monroe County while the U.S. Census Bureau indicates a population decrease. Both datasets were brought to SFRPC staff attention during the 2006 South Florida Regional Hurricane Evacuation Traffic Study, as indicators of change in Monroe County. It was agreed that both trends would be modeled as test scenarios until additional data becomes available that will clarify the nature of Monroe County population trends.

Test Scenario 5 models the U.S. Census Bureau Annual Population Estimates for Monroe County from 2000-2005, which indicate a 4.10% decrease in Monroe County population.

User Model Adjustments: Because the user model analysis is based on different dwelling unit types (mobile home, permanent and tourist), not on population data, the 4.10% decrease shown in the U.S. Census Bureau population estimates had to be applied to the permanent and mobile home unit counts. The 4.10% decrease in permanent and mobile home units was calculated for each Monroe County model evacuation zone and is reflected in the changes made to the dwelling unit data in the user model (in the MoSocio - Monroe County Dwelling Unit and Population Data tab).

Results: Test Scenario 5 results in a slight reduction in Monroe County and Miami-Dade County clearance times. Monroe County clearance time decreases by 1.1 hours on its most critical link, the Snake Creek Bridge, and Miami-Dade County clearance time declines by 0.8 hours on its most critical link, US 1 through Florida City.

[16]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 5
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 5					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.8**	**6.3**	**7.3**	**8.1**	**9.0**	**9.8**
Florida Turnpike northbound out of Region	**11.7**	**13.1**	**15.6**	**17.6**	**19.9**	**22.0**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.2**	**5.5**	**6.4**	**7.0**	**7.9**	**8.5**
US 41 westbound out of Region	**5.5**	**6.4**	**7.0**	**7.9**	**8.7**	**9.7**
Monroe County Critical Links						
Snake Creek Bridge	**18.8**	**22.1**	**31.2**	**34.6**	**31.2**	**34.6**
US 1 18-mile stretch out of the Florida Keys	**17.6**	**20.6**	**29.0**	**32.0**	**29.0**	**32.0**
Northbound Card Sound Road before Ocean Reef	**18.8**	**22.0**	**30.9**	**34.2**	**30.9**	**34.2**
Miami-Dade County Critical Links						
US 1 through Florida City	**10.0**	**14.2**	**18.6**	**26.1**	**23.7**	**27.6**
Northbound ramp from US 1 to the HEFT	**8.7**	**10.1**	**14.9**	**19.5**	**20.1**	**23.3**
Krome Avenue link through downtown Homestead	**5.7**	**6.8**	**8.2**	**6.2**	**6.6**	**9.2**
HEFT link north of the SW 312 Street interchange	**5.2**	**5.8**	**8.4**	**10.7**	**11.6**	**13.2**
Krome Avenue link north of Quail Roost Drive	**4.3**	**7.0**	**10.3**	**12.9**	**7.9**	**9.6**
HEFT link north of the SW 137th Avenue interchange	**5.3**	**5.9**	**8.7**	**11.0**	**12.6**	**14.3**
HEFT link north of the SW 112th Avenue interchange	**5.0**	**5.8**	**8.7**	**11.0**	**13.2**	**14.4**
HEFT link north of Coral Reef Road interchange	**5.0**	**5.0**	**7.1**	**9.0**	**13.4**	**14.6**
HEFT link south of US 27 interchange	**4.5**	**5.2**	**6.9**	**8.7**	**11.3**	**12.8**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 5
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.1**
Florida Turnpike northbound out of Region	**0.0**	**-0.1**	**-0.1**	**-0.1**	**-0.1**	**-0.1**
US 27 northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
I-75 west/northbound out of Region	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
US 41 westbound out of Region	**-0.1**	**0.0**	**-0.1**	**-0.1**	**-0.1**	**0.0**
Monroe County Critical Links						
Snake Creek Bridge	**-0.6**	**-0.6**	**-1.1**	**-1.1**	**-1.1**	**-1.1**
US 1 18-mile stretch out of the Florida Keys	**-0.6**	**-0.6**	**-1.0**	**-1.0**	**-1.0**	**-1.0**
Northbound Card Sound Road before Ocean Reef	**-0.5**	**-0.5**	**-1.1**	**-1.1**	**-1.1**	**-1.1**
Miami-Dade County Critical Links						
US 1 through Florida City	**-0.2**	**-0.4**	**-0.6**	**-0.8**	**-0.7**	**-0.8**
Northbound ramp from US 1 to the HEFT	**-0.3**	**-0.2**	**-0.4**	**-0.5**	**-0.6**	**-0.6**
Krome Avenue link through downtown Homestead	**-0.1**	**-0.1**	**-0.2**	**-0.1**	**-0.1**	**-0.3**
HEFT link north of the SW 312 Street interchange	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**
Krome Avenue link north of Quail Roost Drive	**-0.1**	**-0.1**	**-0.2**	**-0.3**	**-0.1**	**-0.1**
HEFT link north of the SW 137th Avenue interchange	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**
HEFT link north of the SW 112th Avenue interchange	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.3**	**-0.3**
HEFT link north of Coral Reef Road interchange	**-0.1**	**-0.1**	**-0.2**	**-0.2**	**-0.2**	**-0.2**
HEFT link south of US 27 interchange	**0.0**	**0.0**	**-0.1**	**-0.1**	**-0.2**	**-0.2**
McArthur Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Venetian Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Julia Tuttle Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Kennedy Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Broad Causeway (96th Street)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sunny Isles Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lehman Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Hollywood Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sunrise Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Oakland Park Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
NE 14th Street Bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Hillsboro bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Altantic Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
SE 17th Street bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
East Commercial Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sheridan Street bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dania Beach Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Las Olas bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 6: University of Florida Bureau of Economic and Business Research (BEBR) Population Estimates

	Baseline Clearance Times[17]	Change from Baseline Clearance Times	Test Scenario 6 Clearance Times
Regional Roadways			
I-95	9.9	0	9.9
Florida's Turnpike	22.1	+0.1	22.2
US 27	3.4	0	3.4
I-75	8.5	+0.1	8.6
US 41	9.7	+0.1	9.8
Monroe County	35.7	+0.9	36.6
Miami-Dade County	28.4	+0.7	29.1
Broward County	6.2	0	6.2

Description: There are two recognized annual population estimate sources for Monroe County: the U.S. Census Bureau and the Bureau of Economic and Business Research at the University of Florida. Both of these entities use an estimation methodology to project population change since the 2000 Census. The 2000-2005 datasets from each of these entities indicate opposite trends; BEBR data indicates a population increase in Monroe County while the U.S. Census Bureau indicates a population decrease. Both datasets were brought to SFRPC staff attention during the 2006 South Florida Regional Hurricane Evacuation Traffic Study, as indicators of change in Monroe County. It was agreed that both trends would be modeled as test scenarios until additional data is available that will clarify the nature of Monroe County population trends.

Test Scenario 6 models BEBR's Annual Population Estimates for Monroe County from 2000-2005, which indicate a 3.55% increase in Monroe County population.

User Model Adjustments: Because the user model analysis is based on different dwelling unit types (mobile home, permanent and tourist), not on population data, the 3.55% increase shown in the BEBR population estimates had to be applied to the permanent and mobile home unit counts. The 3.55% increase in permanent and mobile home units was calculated for each Monroe County model evacuation zone and is reflected in the changes made to the dwelling unit data in the user model (in the MoSocio - Monroe County Dwelling Unit and Population Data tab).

Results: Test Scenario 6 results in a slight increase in Monroe County and Miami-Dade County clearance times. Monroe County clearance time increases by 0.9 hours on its most critical link, the Snake Creek Bridge, and Miami-Dade County clearance time climbs by 0.7 hours on its most critical link, US 1 through Florida City.

[17]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 6
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 6					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.8**	**6.4**	**7.4**	**8.1**	**9.1**	**9.9**
Florida Turnpike northbound out of Region	**11.8**	**13.2**	**15.8**	**17.8**	**20.1**	**22.2**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.2**	**5.6**	**6.4**	**7.0**	**7.9**	**8.6**
US 41 westbound out of Region	**5.6**	**6.4**	**7.1**	**8.0**	**8.8**	**9.8**
Monroe County Critical Links						
Snake Creek Bridge	**19.8**	**23.2**	**33.2**	**36.6**	**33.2**	**36.6**
US 1 18-mile stretch out of the Florida Keys	**18.6**	**21.6**	**30.9**	**33.9**	**30.9**	**33.9**
Northbound Card Sound Road before Ocean Reef	**19.8**	**23.0**	**32.9**	**36.2**	**32.9**	**36.2**
Miami-Dade County Critical Links						
US 1 through Florida City	**10.4**	**14.8**	**19.7**	**27.6**	**25.1**	**29.1**
Northbound ramp from US 1 to the HEFT	**9.2**	**10.5**	**15.7**	**20.5**	**21.2**	**24.5**
Krome Avenue link through downtown Homestead	**5.9**	**7.0**	**8.6**	**6.4**	**6.9**	**9.6**
HEFT link north of the SW 312 Street interchange	**5.3**	**6.0**	**8.8**	**11.1**	**12.1**	**13.8**
Krome Avenue link north of Quail Roost Drive	**4.5**	**7.2**	**10.8**	**13.4**	**8.1**	**9.9**
HEFT link north of the SW 137th Avenue interchange	**5.5**	**6.1**	**9.1**	**11.4**	**13.1**	**14.8**
HEFT link north of the SW 112th Avenue interchange	**5.2**	**6.0**	**9.1**	**11.4**	**13.7**	**14.9**
HEFT link north of Coral Reef Road interchange	**5.2**	**5.2**	**7.4**	**9.4**	**13.7**	**15.0**
HEFT link south of US 27 interchange	**4.6**	**5.3**	**7.1**	**9.0**	**11.6**	**13.1**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 6
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	0.0	0.1	0.1	0.0	0.1	0.0
Florida Turnpike northbound out of Region	0.1	0.0	0.1	0.1	0.1	0.1
US 27 northbound out of Region	0.0	0.0	0.0	0.0	0.0	0.0
I-75 west/northbound out of Region	0.0	0.1	0.0	0.0	0.0	0.1
US 41 westbound out of Region	0.0	0.0	0.0	0.0	0.0	0.1
Monroe County Critical Links						
Snake Creek Bridge	0.4	0.5	0.9	0.9	0.9	0.9
US 1 18-mile stretch out of the Florida Keys	0.4	0.4	0.9	0.9	0.9	0.9
Northbound Card Sound Road before Ocean Reef	0.5	0.5	0.9	0.9	0.9	0.9
Miami-Dade County Critical Links						
US 1 through Florida City	0.2	0.2	0.5	0.7	0.7	0.7
Northbound ramp from US 1 to the HEFT	0.2	0.2	0.4	0.5	0.5	0.6
Krome Avenue link through downtown Homestead	0.1	0.1	0.2	0.1	0.2	0.1
HEFT link north of the SW 312 Street interchange	0.0	0.1	0.2	0.2	0.2	0.3
Krome Avenue link north of Quail Roost Drive	0.1	0.1	0.3	0.2	0.1	0.2
HEFT link north of the SW 137th Avenue interchange	0.1	0.1	0.2	0.2	0.2	0.2
HEFT link north of the SW 112th Avenue interchange	0.1	0.1	0.2	0.2	0.2	0.2
HEFT link north of Coral Reef Road interchange	0.1	0.1	0.1	0.2	0.1	0.2
HEFT link south of US 27 interchange	0.1	0.1	0.1	0.2	0.1	0.1
McArthur Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Venetian Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Julia Tuttle Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Kennedy Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broad Causeway (96th Street)	0.0	0.0	0.0	0.0	0.0	0.0
Sunny Isles Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Lehman Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hollywood Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sunrise Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Oakland Park Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
NE 14th Street Bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hillsboro bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Altantic Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
SE 17th Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
East Commercial Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sheridan Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Dania Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Las Olas bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 7: Hurricane Making Landfall on Florida's West Coast

	Baseline Clearance Times[18]	Change from Baseline Clearance Times	Test Scenario 7 Clearance Times
Regional Roadways			
I-95	9.9	2.8	12.7
Florida's Turnpike	22.1	6.9	29
US 27	3.4	0.7	4.1
I-75	8.5	2.6	11.1
US 41	9.7	2.1	11.8
Monroe County	35.7	0	35.7
Miami-Dade County	28.4	0	28.4
Broward County	6.2	0	6.2

Description: Test Scenario 7 is designed to test the outcome of a hurricane making landfall on the west coast of Florida and then moving eastward over South Florida, like Hurricane Wilma.

User Model Adjustments: Broward and Miami-Dade County Inland Area participation rates and evacuation zone participation rates, in those western evacuation zones not directed to evacuate, were increased to represent a greater evacuation from the western areas of Broward and Miami-Dade Counties. Evacuation participation rates were increased to 20% (from 5 and 10%) under Category 1-3 storm conditions and to 30% (from 10%) under Category 4-5 storm conditions in the "MDBehav"-Miami-Dade County Behavioral Inputs tab and in the "BrBehav" – Broward County Behavioral Inputs tab.

Results: Test Scenario 7 results in a significant increase in regional roadway clearance times: I-95 clearance time increases by 2.8 hours, Florida's Turnpike clearance time increases by 6.9 hours, US 27 clearance time increases by 0.7 hours, I-75 clearance time increases by 2.6 hours and US 41 clearance time increases by 2.1 hours.

[18]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 7
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 7					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**7.8**	**8.3**	**9.2**	**9.9**	**11.8**	**12.7**
Florida Turnpike northbound out of Region	**16.5**	**18.0**	**20.2**	**22.2**	**26.8**	**29.0**
US 27 northbound out of Region	**3.2**	**3.2**	**3.4**	**3.5**	**4.0**	**4.1**
I-75 west/northbound out of Region	**6.9**	**7.3**	**8.0**	**8.6**	**10.4**	**11.1**
US 41 westbound out of Region	**7.1**	**7.9**	**8.4**	**9.3**	**10.8**	**11.8**
Monroe County Critical Links						
Snake Creek Bridge	**19.4**	**22.7**	**32.3**	**35.7**	**32.3**	**35.7**
US 1 18-mile stretch out of the Florida Keys	**18.2**	**21.2**	**30.0**	**33.0**	**30.0**	**33.0**
Northbound Card Sound Road before Ocean Reef	**19.3**	**22.5**	**32.0**	**35.3**	**32.0**	**35.3**
Miami-Dade County Critical Links						
US 1 through Florida City	**10.4**	**14.8**	**19.2**	**27.0**	**24.4**	**28.4**
Northbound ramp from US 1 to the HEFT	**9.1**	**10.5**	**15.5**	**20.3**	**20.7**	**23.9**
Krome Avenue link through downtown Homestead	**6.0**	**7.1**	**8.5**	**6.4**	**6.7**	**9.5**
HEFT link north of the SW 312 Street interchange	**5.4**	**6.1**	**8.8**	**11.2**	**12.1**	**13.7**
Krome Avenue link north of Quail Roost Drive	**5.0**	**7.8**	**10.9**	**13.7**	**8.1**	**10.0**
HEFT link north of the SW 137th Avenue interchange	**5.7**	**6.3**	**9.2**	**11.6**	**13.1**	**14.8**
HEFT link north of the SW 112th Avenue interchange	**5.4**	**6.3**	**9.2**	**11.6**	**13.7**	**14.9**
HEFT link north of Coral Reef Road interchange	**5.9**	**5.9**	**8.2**	**10.4**	**15.2**	**16.5**
HEFT link south of US 27 interchange	**5.8**	**6.6**	**8.4**	**10.5**	**13.9**	**15.6**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.9**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 7
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**2.0**	**2.0**	**1.9**	**1.8**	**2.8**	**2.8**
Florida Turnpike northbound out of Region	**4.8**	**4.8**	**4.5**	**4.5**	**6.8**	**6.9**
US 27 northbound out of Region	**0.5**	**0.5**	**0.4**	**0.5**	**0.7**	**0.7**
I-75 west/northbound out of Region	**1.7**	**1.8**	**1.6**	**1.6**	**2.5**	**2.6**
US 41 westbound out of Region	**1.5**	**1.5**	**1.3**	**1.3**	**2.0**	**2.1**
Monroe County Critical Links						
Snake Creek Bridge	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
US 1 18-mile stretch out of the Florida Keys	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Northbound Card Sound Road before Ocean Reef	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Miami-Dade County Critical Links						
US 1 through Florida City	**0.2**	**0.2**	**0.0**	**0.1**	**0.0**	**0.0**
Northbound ramp from US 1 to the HEFT	**0.1**	**0.2**	**0.2**	**0.3**	**0.0**	**0.0**
Krome Avenue link through downtown Homestead	**0.2**	**0.2**	**0.1**	**0.1**	**0.0**	**0.0**
HEFT link north of the SW 312 Street interchange	**0.1**	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**
Krome Avenue link north of Quail Roost Drive	**0.6**	**0.7**	**0.4**	**0.5**	**0.1**	**0.3**
HEFT link north of the SW 137th Avenue interchange	**0.3**	**0.3**	**0.3**	**0.4**	**0.2**	**0.2**
HEFT link north of the SW 112th Avenue interchange	**0.3**	**0.4**	**0.3**	**0.4**	**0.2**	**0.2**
HEFT link north of Coral Reef Road interchange	**0.8**	**0.8**	**0.9**	**1.2**	**1.6**	**1.7**
HEFT link south of US 27 interchange	**1.3**	**1.4**	**1.4**	**1.7**	**2.4**	**2.6**
McArthur Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Venetian Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Julia Tuttle Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Kennedy Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Broad Causeway (96th Street)	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sunny Isles Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Lehman Causeway	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**0.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Hollywood Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sunrise Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Oakland Park Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
NE 14th Street Bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Hillsboro bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Altantic Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
SE 17th Street bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
East Commercial Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sheridan Street bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Dania Beach Blvd bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Las Olas bridge over the Intracoastal	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

Test Scenario 8: Monroe County Phased Evacuation and Miller Model Participation Rates

	Baseline Clearance Times[19]	Change from Baseline Clearance Times	Test Scenario 8 Clearance Times
Regional Roadways			
I-95	9.9	-0.8	9.1
Florida's Turnpike	22.1	-2.2	19.9
US 27	3.4	0	3.4
I-75	8.5	-0.4	8.1
US 41	9.7	-1.0	8.7
Monroe County	35.7	-17.5	18.2
Miami-Dade County	28.4	-12.4	16
Broward County	6.2	0	6.2

Description: Test Scenario 8 is designed to reflect a Monroe County staged evacuation and Monroe County participation rates at the level presented in the Miller Model, 75%.

Monroe County staged evacuation requires that all tourists evacuate approximately 48 hours in advance of tropical storm winds; that all mobile home residents evacuate approximately 36 hours prior to tropical storm winds and that all Keys residents begin a phased evacuation approximately 30 hours in advance of tropical storm winds. This process is designed to facilitate the exit of all tourists and mobile home residents from the Keys before the permanent resident evacuation begins.

User Model Adjustments: Because tourist and mobile home units have exited out of the Keys before permanent residents in a staged evacuation, it was assumed, in this simulation, that tourist unit and mobile home units would not be part of the evacuation scenario. Participation rates for tourist units and mobile home units were reduced to 0% in the user model (in the "MoBehav"- Monroe County Behavioral Inputs tab) under all storm conditions.

The Monroe County resident participation rate for hurricane evacuations documented in the Miller Model is 75% for Category 3-5 storm conditions. To model this, participation rates for permanent units were reduced to 75% in the user model (in the "MoBehav"- Monroe County Behavioral Inputs tab) under Category 3-5 storm conditions.

Results:
Test Scenario 8 results in a reduction in Monroe County and Miami-Dade County clearance times. Monroe County clearance time decreases by 17.5 hours on its most critical link, the

[19]All clearance times shown represent the worst case regional hurricane evacuation scenario outcome. In this summary, clearance time is defined as the number of hours it takes total evacuating vehicles to traverse the most limiting critical link (the critical link with the highest volume to capacity ratio) in each county under a worst case scenario regional hurricane evacuation. For the regional roadways, clearance time is the amount of time it takes the total evacuating vehicles on each regional roadway to exit the region under the worst case scenario regional hurricane evacuation. The regional roadway clearance times are mutually exclusive and are not cumulative. For more detail, please review the following pages that show all critical links analyzed for this test evacuation scenario.

Snake Creek Bridge and Miami-Dade County clearance time declines by 12.4 hours on its most critical link, US 1 through Florida City.

Test Scenario 8 also results in a decrease in regional roadway clearance times: I-95 clearance time decreases by 0.8 hours, Florida's Turnpike clearance time decreases by 2.2 hours, I-75 clearance time decreases by 0.4 hours and US 41 clearance time decreases by 1 hour.

2006 South Florida Regional Hurricane Evacuation Model
Summary for Test Scenario 8
Critical Links Analysis

Critical Links	Clearance Times* Under Test Scenario 8					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	**5.5**	**5.8**	**6.7**	**7.3**	**8.4**	**9.1**
Florida Turnpike northbound out of Region	**10.7**	**11.7**	**14.0**	**15.5**	**18.3**	**19.9**
US 27 northbound out of Region	**2.7**	**2.7**	**3.0**	**3.0**	**3.3**	**3.4**
I-75 west/northbound out of Region	**5.0**	**5.2**	**6.1**	**6.5**	**7.5**	**8.1**
US 41 westbound out of Region	**5.1**	**5.7**	**6.3**	**6.9**	**8.0**	**8.7**
Monroe County Critical Links						
Snake Creek Bridge	**12.0**	**12.0**	**18.1**	**18.2**	**18.1**	**18.2**
US 1 18-mile stretch out of the Florida Keys	**11.3**	**11.3**	**16.9**	**16.9**	**16.9**	**16.9**
Northbound Card Sound Road before Ocean Reef	**11.9**	**11.9**	**18.0**	**18.0**	**18.0**	**18.0**
Miami-Dade County Critical Links						
US 1 through Florida City	**6.8**	**8.3**	**11.5**	**14.5**	**15.0**	**16.0**
Northbound ramp from US 1 to the HEFT	**6.1**	**6.2**	**9.4**	**11.2**	**12.9**	**13.8**
Krome Avenue link through downtown Homestead	**4.3**	**4.5**	**5.8**	**4.3**	**4.8**	**6.0**
HEFT link north of the SW 312 Street interchange	**4.0**	**4.0**	**6.0**	**6.9**	**8.4**	**8.9**
Krome Avenue link north of Quail Roost Drive	**3.7**	**4.9**	**7.3**	**8.6**	**6.2**	**7.4**
HEFT link north of the SW 137th Avenue interchange	**4.1**	**4.1**	**6.2**	**7.2**	**9.4**	**10.0**
HEFT link north of the SW 112th Avenue interchange	**3.9**	**4.1**	**6.3**	**7.3**	**9.9**	**10.2**
HEFT link north of Coral Reef Road interchange	**4.0**	**3.8**	**5.5**	**6.4**	**11.0**	**11.5**
HEFT link south of US 27 interchange	**3.7**	**4.0**	**5.3**	**6.2**	**9.2**	**10.0**
McArthur Causeway	**8.0**	**9.1**	**7.8**	**9.3**	**8.0**	**9.3**
Venetian Causeway	**7.0**	**7.8**	**7.3**	**8.4**	**6.8**	**8.0**
Julia Tuttle Causeway	**6.5**	**6.5**	**6.4**	**6.3**	**6.3**	**6.4**
Kennedy Causeway	**7.3**	**8.0**	**7.5**	**8.3**	**7.5**	**7.9**
Broad Causeway (96th Street)	**9.5**	**10.2**	**9.6**	**10.6**	**10.5**	**11.5**
Sunny Isles Causeway	**4.9**	**5.5**	**5.2**	**4.9**	**4.8**	**4.9**
Lehman Causeway	**3.6**	**3.5**	**3.5**	**3.7**	**3.4**	**3.5**
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	**5.8**	**5.7**	**5.0**	**5.2**	**5.4**	**5.9**
Hollywood Blvd bridge over the Intracoastal	**4.6**	**4.7**	**4.7**	**4.8**	**4.6**	**4.7**
Sunrise Blvd bridge over the Intracoastal	**4.5**	**4.8**	**4.6**	**4.8**	**4.5**	**4.7**
Oakland Park Blvd bridge over the Intracoastal	**5.4**	**5.7**	**5.4**	**5.7**	**5.4**	**5.7**
NE 14th Street Bridge over the Intracoastal	**4.0**	**4.1**	**4.1**	**4.1**	**4.1**	**4.2**
Hillsboro bridge over the Intracoastal	**4.3**	**4.4**	**4.4**	**4.4**	**4.4**	**4.5**
Altantic Blvd bridge over the Intracoastal	**4.7**	**4.7**	**4.6**	**4.7**	**4.6**	**4.6**
SE 17th Street bridge over the Intracoastal	**4.4**	**4.7**	**5.0**	**5.2**	**5.0**	**5.3**
East Commercial Blvd bridge over the Intracoastal	**5.9**	**6.1**	**6.1**	**6.2**	**6.0**	**6.2**
Sheridan Street bridge over the Intracoastal	**3.7**	**3.7**	**4.0**	**3.9**	**3.7**	**4.1**
Dania Beach Blvd bridge over the Intracoastal	**3.2**	**3.4**	**3.5**	**3.8**	**4.2**	**3.7**
Las Olas bridge over the Intracoastal	**3.7**	**3.9**	**3.0**	**3.2**	**3.0**	**3.2**

* The clearance times shown represent the traffic volume-to-roadway capacity ratio, in hours, for each specified critical link. These times are mutually exclusive and are not cumulative. Under each hurricane evacuation scenario, each county's overall clearance time is defined as the number of hours it takes total evacuating vehicles to traverse that county's most limiting critical link (the critical link with the highest volume-to-capacity ratio). For the regional roadways, clearance time is the amount of time of time it takes the total evacuating vehicles on each regional roadway to exit the region under each hurricane evacuation scenario.

2006 South Florida Regional Hurricane Evacuation Mode
Summary for Test Scenario 8
Critical Links Analysis

Critical Links	Change in Clearance Times* from 2006 SFRHEM					
	1A	1B	2A	2B	3A	3B
Regional Routes out of South Florida						
I-95 northbound out of Region	-0.3	-0.5	-0.6	-0.8	-0.6	-0.8
Florida Turnpike northbound out of Region	-1.0	-1.5	-1.7	-2.2	-1.7	-2.2
US 27 northbound out of Region	0.0	0.0	0.0	0.0	0.0	0.0
I-75 west/northbound out of Region	-0.2	-0.3	-0.3	-0.5	-0.4	-0.4
US 41 westbound out of Region	-0.5	-0.7	-0.8	-1.1	-0.8	-1.0
Monroe County Critical Links						
Snake Creek Bridge	-7.4	-10.7	-14.2	-17.5	-14.2	-17.5
US 1 18-mile stretch out of the Florida Keys	-6.9	-9.9	-13.1	-16.1	-13.1	-16.1
Northbound Card Sound Road before Ocean Reef	-7.4	-10.6	-14.0	-17.3	-14.0	-17.3
Miami-Dade County Critical Links						
US 1 through Florida City	-3.4	-6.3	-7.7	-12.4	-9.4	-12.4
Northbound ramp from US 1 to the HEFT	-2.9	-4.1	-5.9	-8.8	-7.8	-10.1
Krome Avenue link through downtown Homestead	-1.5	-2.4	-2.6	-2.0	-1.9	-3.5
HEFT link north of the SW 312 Street interchange	-1.3	-1.9	-2.6	-4.0	-3.5	-4.6
Krome Avenue link north of Quail Roost Drive	-0.7	-2.2	-3.2	-4.6	-1.8	-2.3
HEFT link north of the SW 137th Avenue interchange	-1.3	-1.9	-2.7	-4.0	-3.5	-4.6
HEFT link north of the SW 112th Avenue interchange	-1.2	-1.8	-2.6	-3.9	-3.6	-4.5
HEFT link north of Coral Reef Road interchange	-1.1	-1.3	-1.8	-2.8	-2.6	-3.3
HEFT link south of US 27 interchange	-0.8	-1.2	-1.7	-2.6	-2.3	-3.0
McArthur Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Venetian Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Julia Tuttle Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Kennedy Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broad Causeway (96th Street)	0.0	0.0	0.0	0.0	0.0	0.0
Sunny Isles Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Lehman Causeway	0.0	0.0	0.0	0.0	0.0	0.0
Broward County Critical Links						
Hallandale Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hollywood Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sunrise Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Oakland Park Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
NE 14th Street Bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Hillsboro bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Altantic Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
SE 17th Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
East Commercial Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Sheridan Street bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Dania Beach Blvd bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0
Las Olas bridge over the Intracoastal	0.0	0.0	0.0	0.0	0.0	0.0

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