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## Unit 5: Hurricane Evacuation Studies

*Time: 90 minutes*

### INTRODUCTION

In the year 2000, some 40 million people lived in coastal counties from Maine to Texas. This population is expected to double by the year 2010. The insured structure value in these coastal counties is valued at over \$10 trillion. For these areas, as well as areas inland, it is imperative that local jurisdictions have data and information available to them to assist with flood planning, hazard analysis, and decision-making.

This unit addresses the Hurricane Evacuation Study (HES) process and the role it plays in local and regional hurricane planning.

***HES can include all studies both presently available and future ones that are relevant to this topic and be used as a tool.***

### OBJECTIVES

At the conclusion of this unit, participants should be able to:

1. Explain the acronyms, terms, and definitions relevant to this unit;
2. Describe the HES process;
3. Explain the role of the HES in local and regional hurricane planning;
4. Identify types of products including Surge Atlas, HURREVAC, Decision Arc and Technical Data Reports;
5. Explain how HURREVAC is used to monitor hurricanes; and
6. Explain the post-storm hurricane assessment.

**METHODOLOGY**

The instructor will describe the HES process and how it is used in local and regional hurricane planning. Then, he or she will give an overview of the HURREVAC model and how it can be used in making decisions about evacuations will also be discussed.

Next, the instructor will provide information on post-storm assessments and how they relate to the HES process to verify what worked and didn't work during the actual event. Afterwards, participants will work in small groups to review and interpret a series of advisory releases and HURREVAC data to determine the potential of a hurricane. After debriefing the group's findings, the instructor will summarize the unit and transition to the next unit.

**Unit 5: Objectives**

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- ◆ Describe the HES process;
- ◆ Explain the role of the HES in local and regional hurricane planning;
- ◆ Identify types of products including Surge Atlas, HURREVAC, Decision Arc, and Technical Data Reports;
- ◆ Explain how HURREVAC is used to monitor hurricanes; and
- ◆ Explain the post-storm hurricane assessment.

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**Visual 5-1**

Notes:

**Unit 5: Hurricane Evacuation Studies**

**Unit 5: Hurricane Evacuation Studies**

- ◆ The Hurricane Evacuation Study (HES) Overview
- ◆ Components
- ◆ Products: Surge Atlas, HURREVAC, Decision Arc, Technical Data Reports
- ◆ Post-Storm Hurricane Assessment
- ◆ Activity 5:1—Using HES Products
- ◆ Lessons Learned

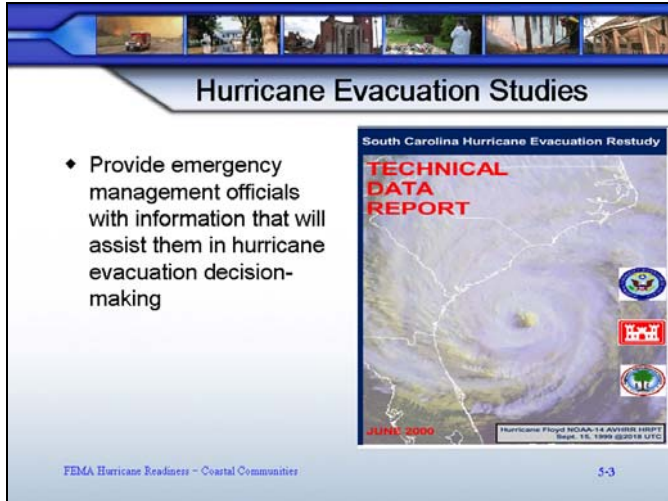
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**Visual 5-2**

Notes:

**Unit 5: Hurricane Evacuation Studies (cont'd.)**

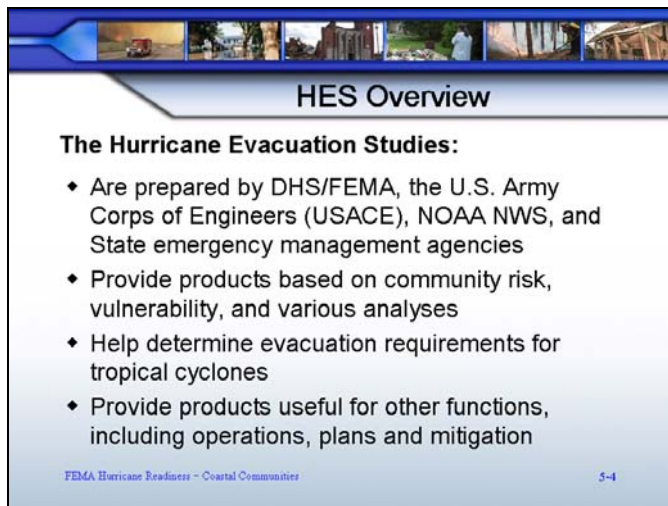
Notes:



*Visual 5-3*

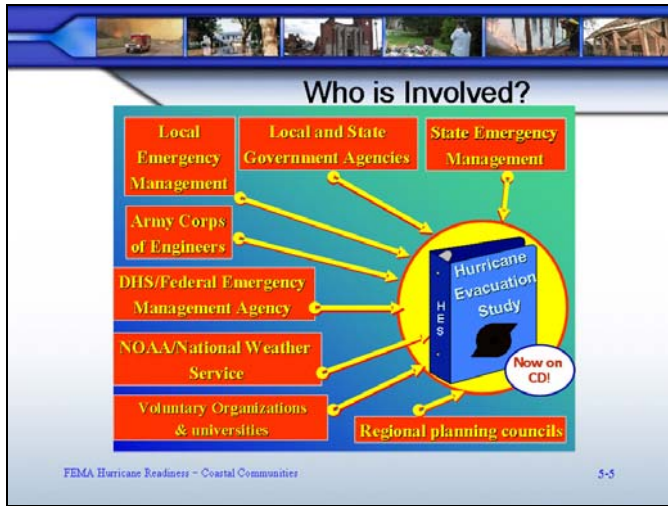
**Overview of the Hurricane Evacuation Studies**

Notes:



*Visual 5-4*

**Who Is Involved?**



**Visual 5-5**

Notes:

**Products Maintained in the HES**

**HES Products**

Three products of the HES:

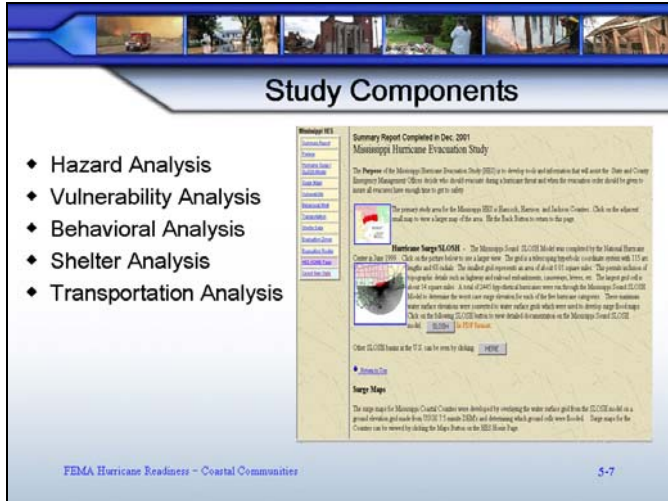
- 1. Technical Data Report:** Includes an analysis of key factors affecting an evacuation
- 2. Storm Tide (surge risk) Maps:** Illustrate inundation areas that must be evacuated for each hurricane category
- 3. Decision Assistance Tools:** Study findings are incorporated into tools such as HURREVAC, intelligent traffic systems, databases, etc.

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**Visual 5-6**

Notes:

**Products Maintained in the HES (cont'd.)**



Visual 5-7

Notes:

**Hazard Analysis**

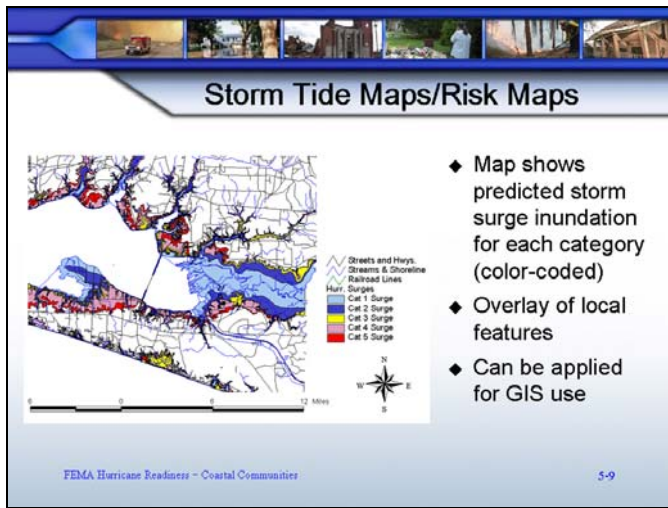


Visual 5-8

Notes:



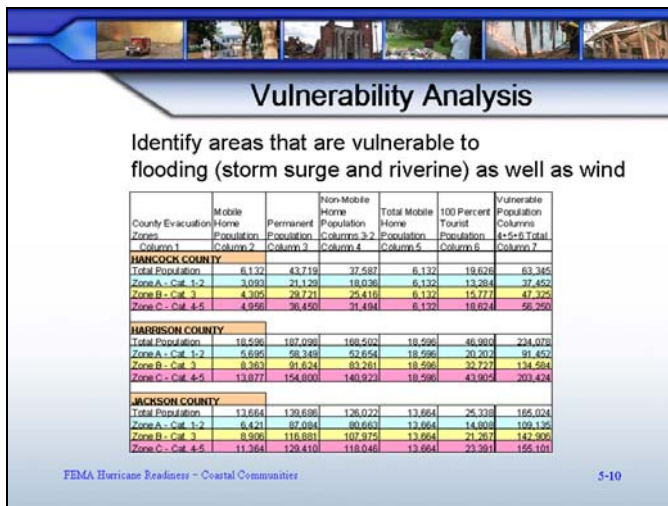
### Storm Tide Maps



Visual 5-9

Notes:

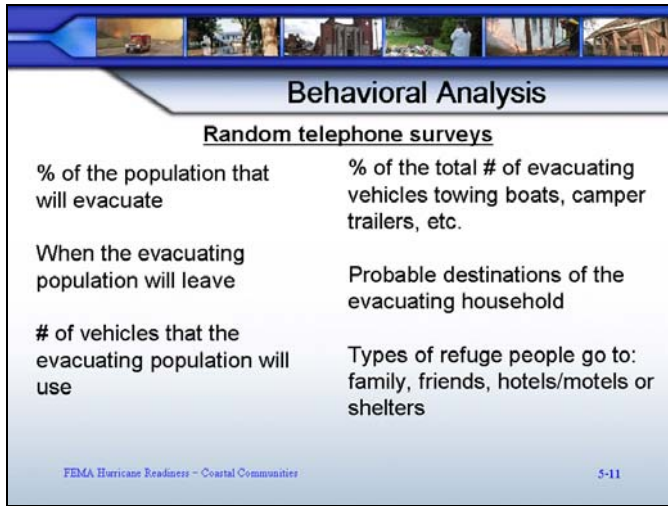
### Vulnerability Analysis



Visual 5-10

Notes:

### Behavioral Analysis



**Behavioral Analysis**

Random telephone surveys

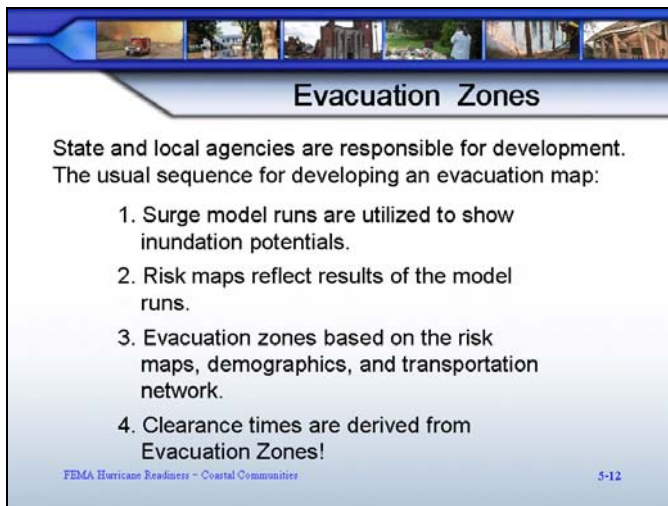
% of the population that will evacuate	% of the total # of evacuating vehicles towing boats, camper trailers, etc.
When the evacuating population will leave	Probable destinations of the evacuating household
# of vehicles that the evacuating population will use	Types of refuge people go to: family, friends, hotels/motels or shelters

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*Visual 5-11*

Notes:

### Evacuation Zones



**Evacuation Zones**

State and local agencies are responsible for development. The usual sequence for developing an evacuation map:

1. Surge model runs are utilized to show inundation potentials.
2. Risk maps reflect results of the model runs.
3. Evacuation zones based on the risk maps, demographics, and transportation network.
4. Clearance times are derived from Evacuation Zones!

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*Visual 5-12*

Notes:

### Evacuation Zone Maps

**Evacuation Zone Maps**

- ◆ Color-coded, based on storm surge zones
- ◆ Evacuation zones conform to identifiable geographical features
- ◆ State and local officials disseminate to public

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Visual 5-13

Notes:

### Transportation Analysis

**Transportation Analysis**

- ◆ Demographics
- ◆ Behavioral assumptions
- ◆ Evacuation routes
- ◆ Road capacities
- ◆ Traffic models (including reverse lane)
- ◆ Evacuation Zones
- ◆ Clearance Times

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Visual 5-14

Notes: