Unit 4:
Making Informed Decisions

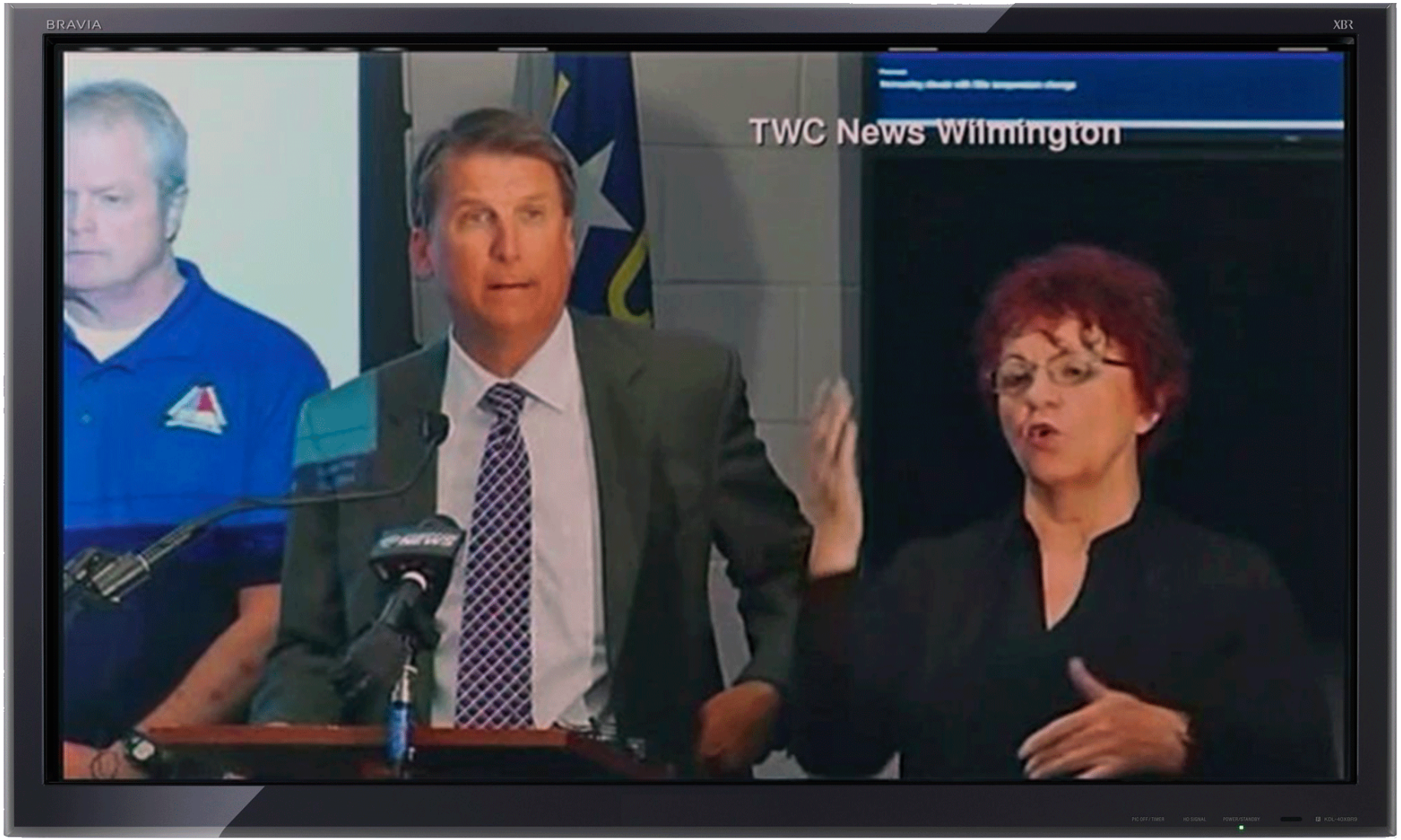
Unit Objectives

At the end of Unit 4, participants will be able to:

- Identify the components of the Hurricane Evacuation Study (HES).
- Explain clearance times and their use.
- Identify the capabilities of HURREVAC.
- Apply NHP products and services for planning and operational purposes.

What Have We Learned Today?

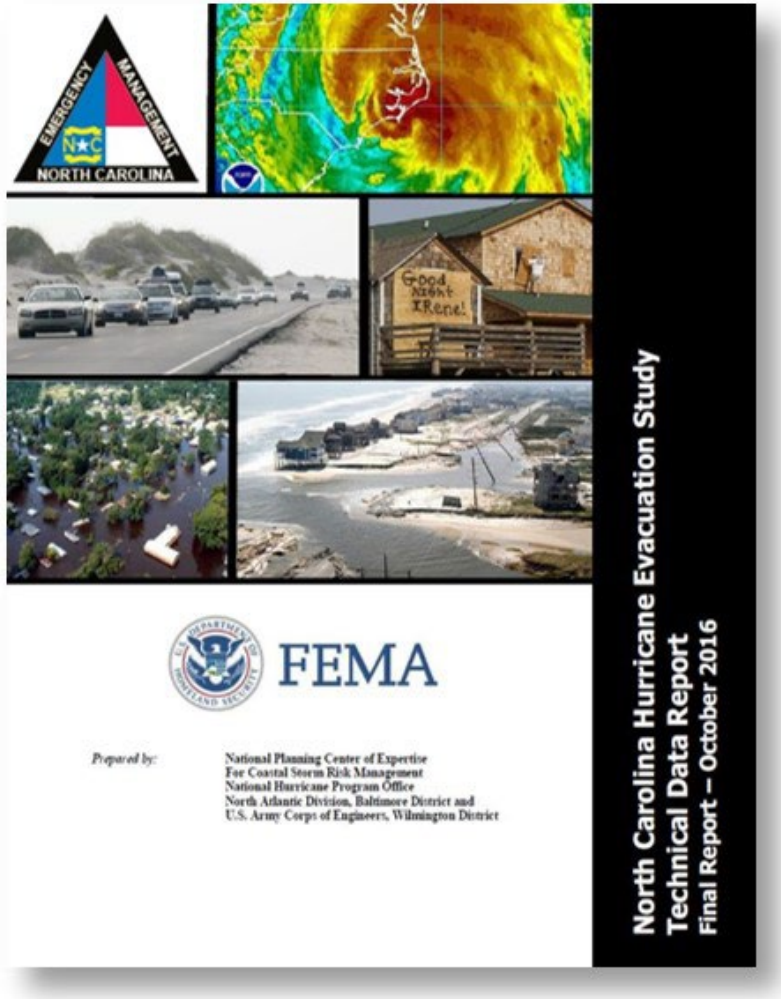
What Are Best Practices?

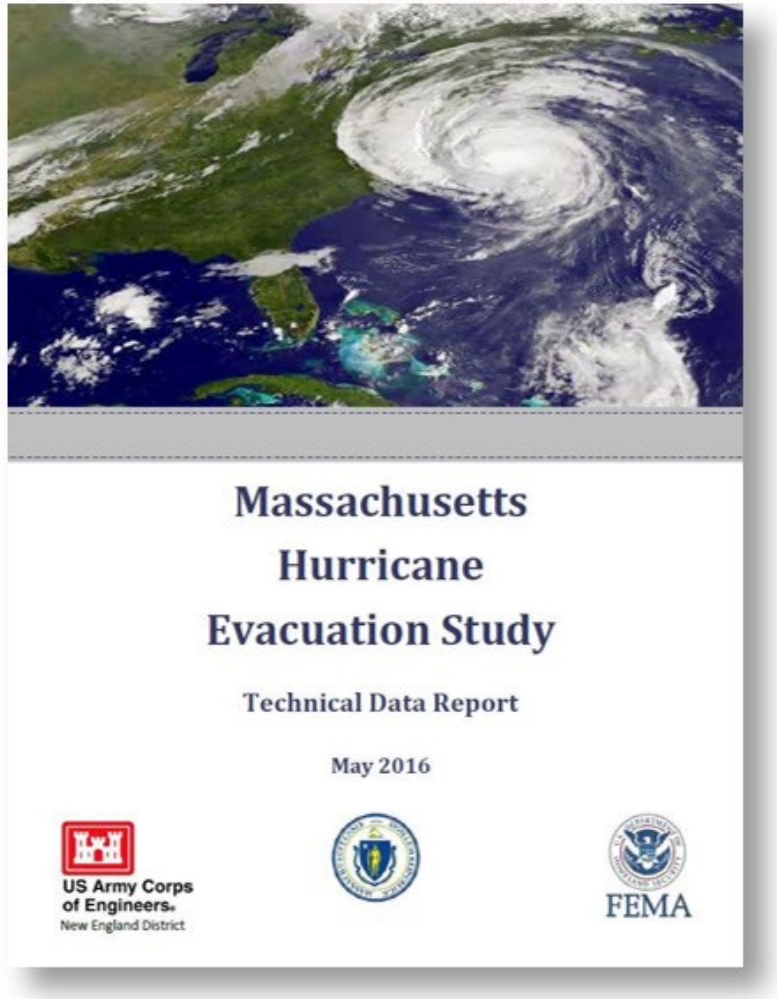


It's Not the Plan. It's the Process.

- **Step 1**
  Form a Collaborative Planning Team.
- **Step 2**
  Understand the Situation.
- **Step 3**
  Determine Goals and Objectives.
- **Step 4**
  Plan Development.
- **Step 5**
  Plan Preparation, Review & Approval.
- **Step 6**
  Plan Implementation & Maintenance.

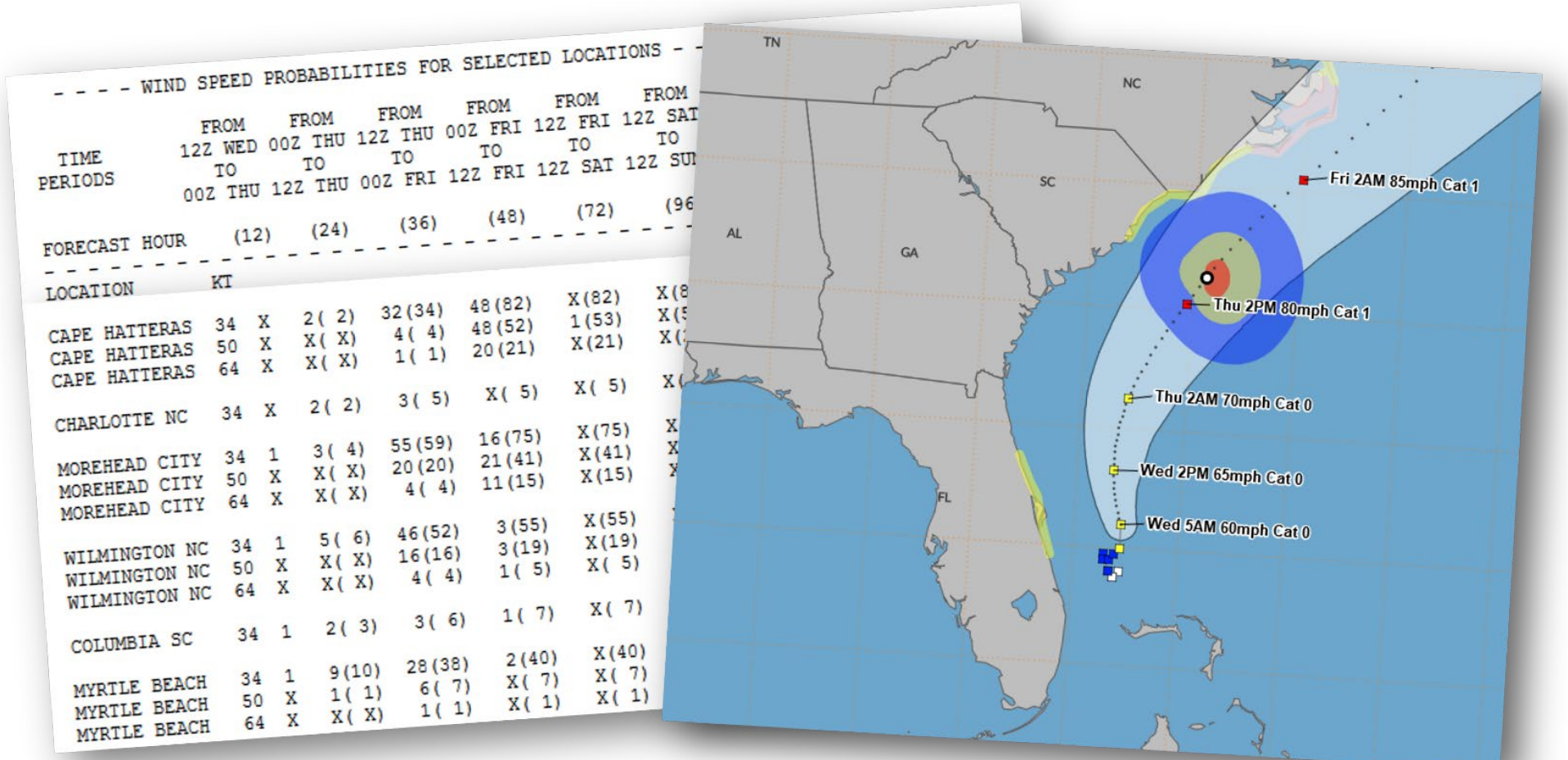
Better Information – HES





Right Tools, Time, and Reason

FEMA



- - - - WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS - -

TIME PERIODS		FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO
FORECAST HOUR		(12)	(24)	(36)	(48)	(72)	(96
LOCATION	KT						
CAPE HATTERAS	34 X	2(2)	32(34)	48(82)	X(82)	X(8
CAPE HATTERAS	50 X	X(X)	4(4)	48(52)	1(53)	X(5
CAPE HATTERAS	64 X	X(X)	1(1)	20(21)	X(21)	X(
CHARLOTTE NC	34 X	2(2)	3(5)	X(5)	X(5)	X
MOREHEAD CITY	34 1	3(4)	55(59)	16(75)	X(75)	X
MOREHEAD CITY	50 X	X(X)	20(20)	21(41)	X(41)	X
MOREHEAD CITY	64 X	X(X)	4(4)	11(15)	X(15)	X
WILMINGTON NC	34 1	5(6)	46(52)	3(55)	X(55)	
WILMINGTON NC	50 X	X(X)	16(16)	3(19)	X(19)	
WILMINGTON NC	64 X	X(X)	4(4)	1(5)	X(5)	
COLUMBIA SC	34 1	2(3)	3(6)	1(7)	X(7)	
MYRTLE BEACH	34 1	9(10)	28(38)	2(40)	X(40)	
MYRTLE BEACH	50 X	1(1)	6(7)	X(7)	X(7)	
MYRTLE BEACH	64 X	X(X)	1(1)	X(1)	X(1)	

The Process: Study. Plan. Execute.

The Process: Study

What Is Useful Information?

FEMA

" We're not that much smarter than we used to be, even though we have *much more* information.

...that means the real skill now is learning how to pick out the *useful* information..."

The Signal and the Noise
- Nate Silver

How Do the Hazards Affect You?

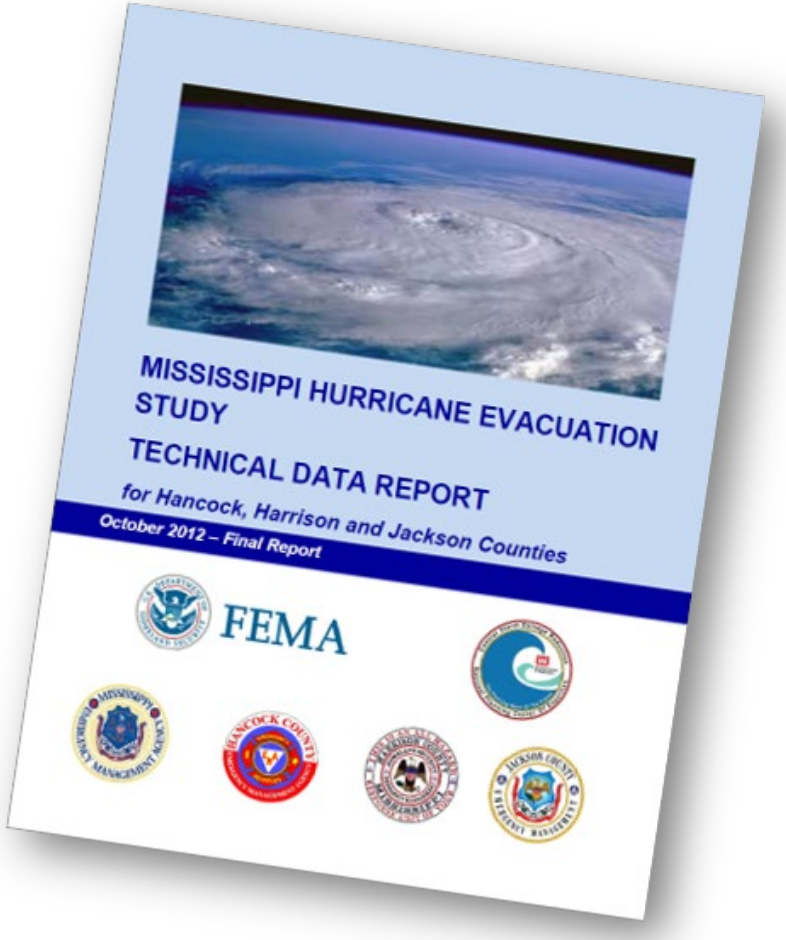
Resources

- **Hurricane Evacuation Study (HES)**
- **THIRA** *Threat and Hazard Identification and Risk Assessment*
- **Flood Risk Maps**
- **Hazus Modeling**
- **Historical Incidents**
- **Local Knowledge**

HES Components

Evacuation Study Components

- **Hazard Analysis**
  What will be wet and what stays dry?
- **Vulnerability Analysis**
  Who/what will be affected in your community?
- **Behavioral Analysis**
  What is the Public thinking?
- **Shelter Analysis**
  What are your shelter needs?
- **Transportation Analysis**
  How long does it take to evacuate?



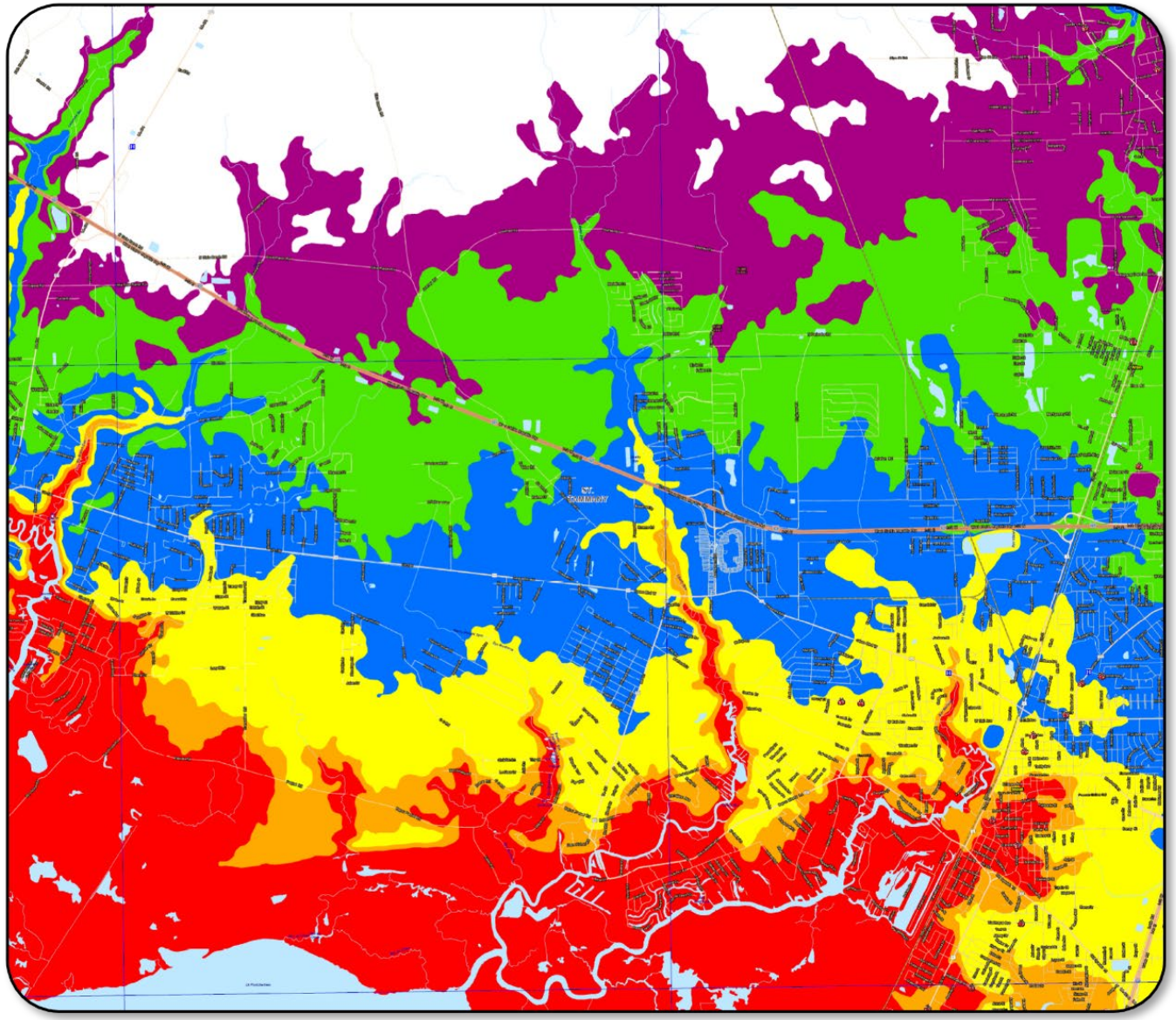
Frequently Asked Questions 1

FAQs

- What will be wet? Dry?
- How high will the water get?
- How far inland?

- **Hazard Analysis**

What's Wet and What's Dry?



AREAS OF POSSIBLE FLOODING

- Tropical Storms and Category 1, 2, 3, 4, and 5 Hurricanes
- Category 1, 2, 3, 4, and 5 Hurricanes
- Category 2, 3, 4, and 5 Hurricanes
- Category 3, 4, and 5 Hurricanes
- Category 4 and 5 Hurricanes
- Category 5 Hurricanes

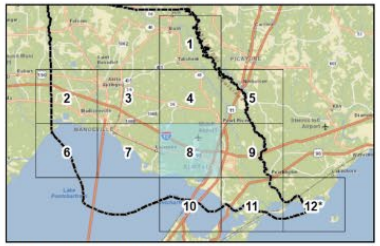
PANEL 8

NATIONAL HURRICANE PROGRAM STORM TIDE FLOOD RISK AREAS

MAP ATLAS FOR:
St. Tammany Parish, Louisiana

JUNE 2015

PANEL LOCATOR DIAGRAM

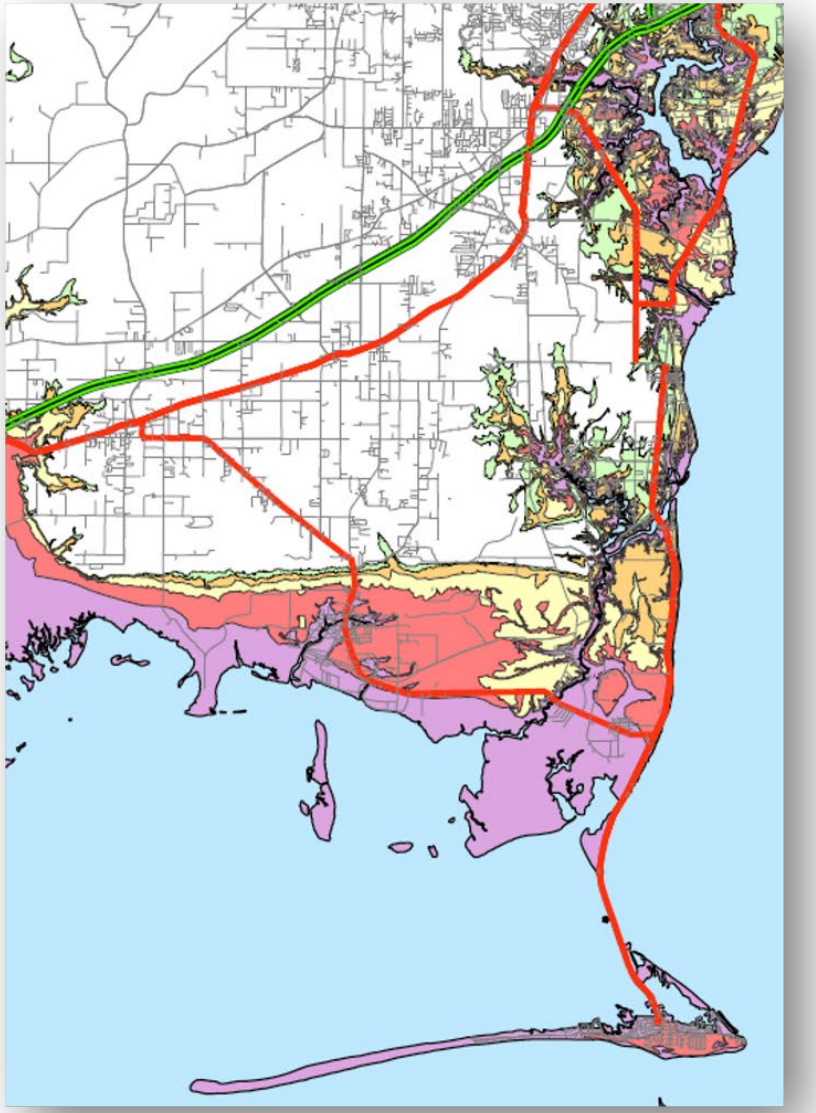


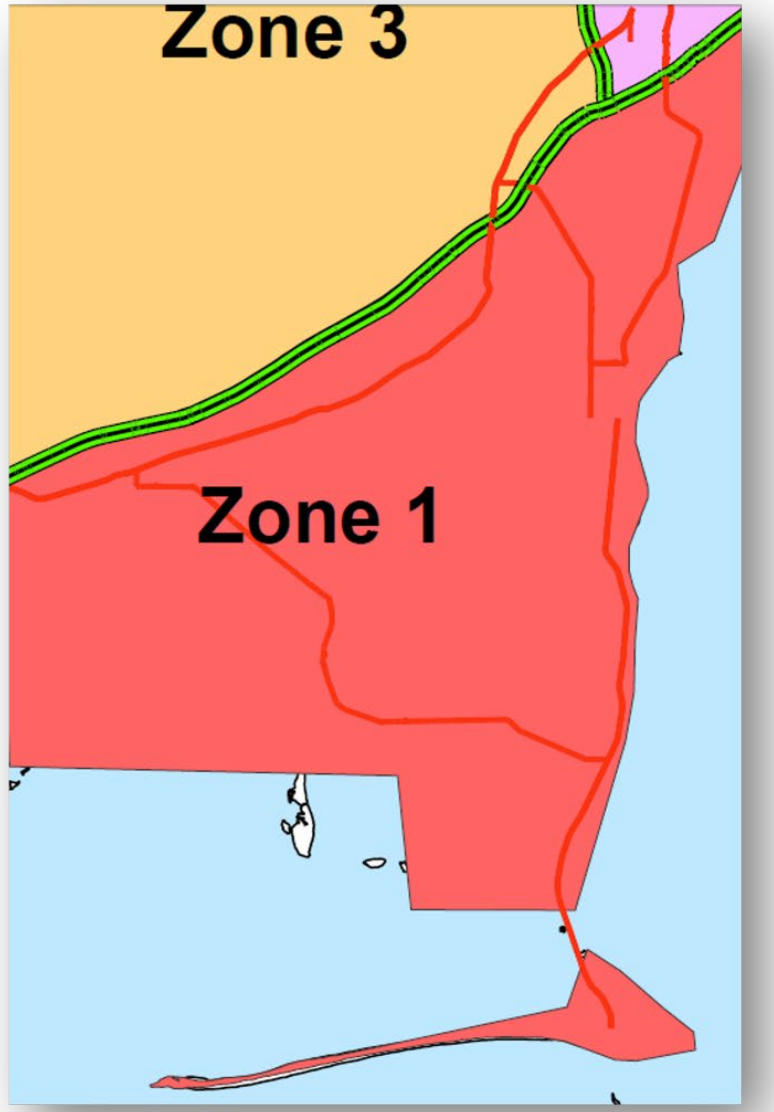
*PANEL NOT PRINTED

FEMA

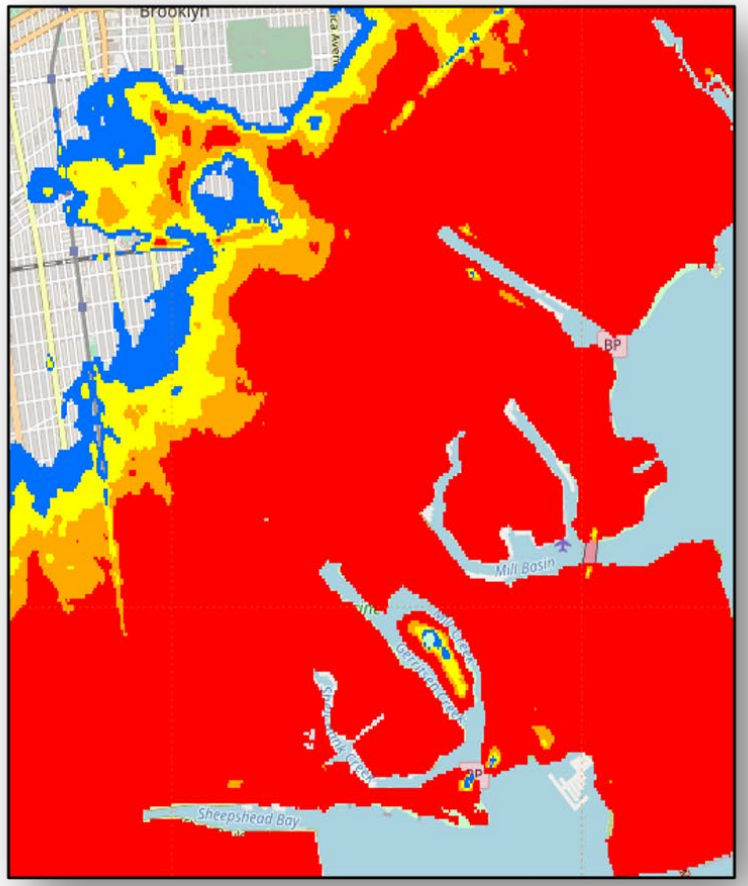
NOAA

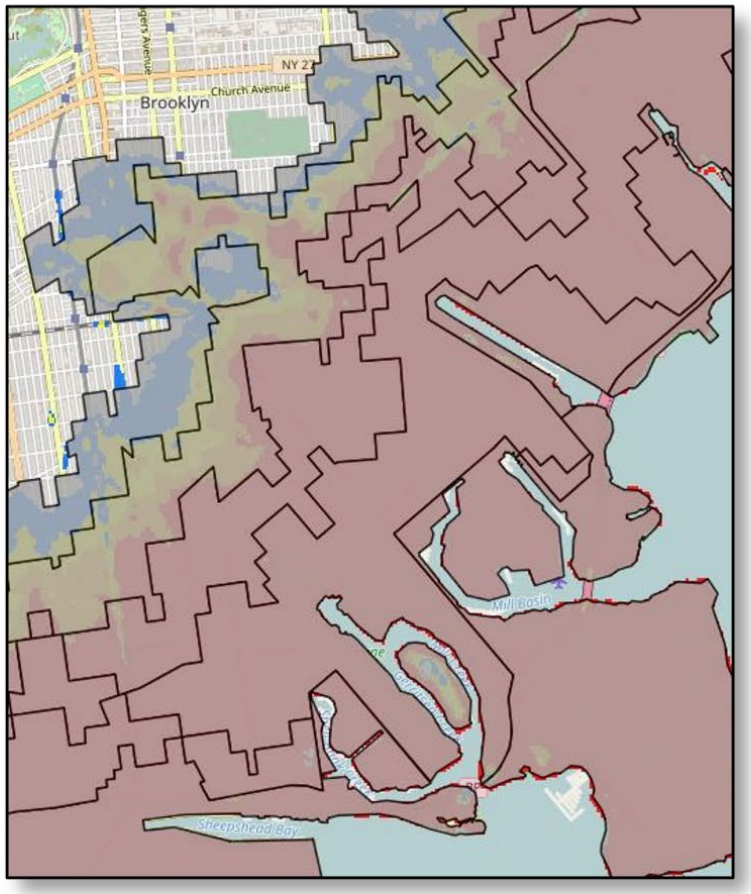
Building Evacuation Zones

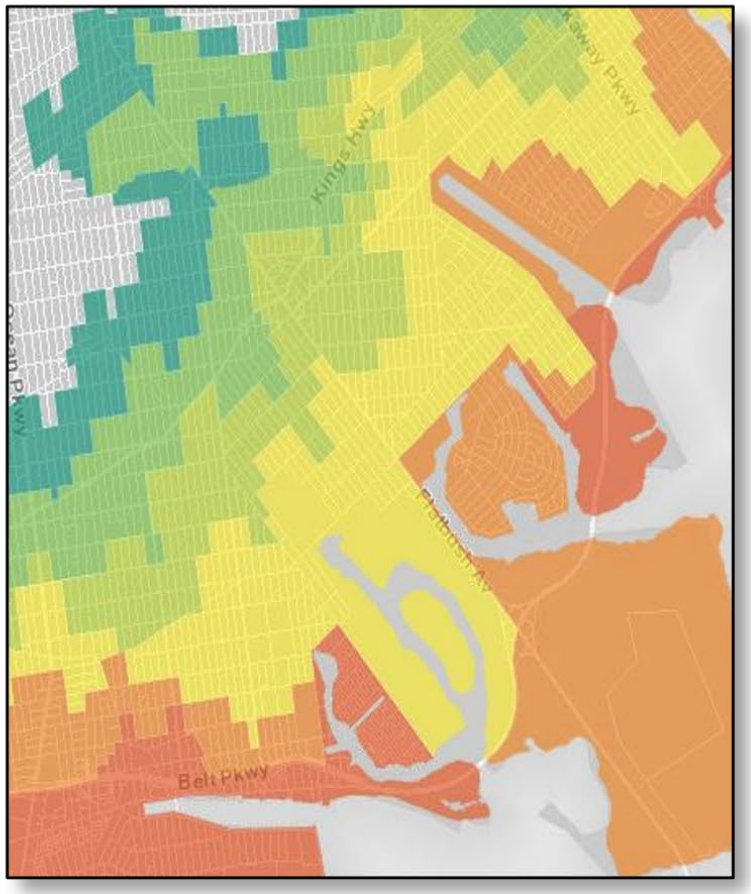




Building Evacuation Zones 2







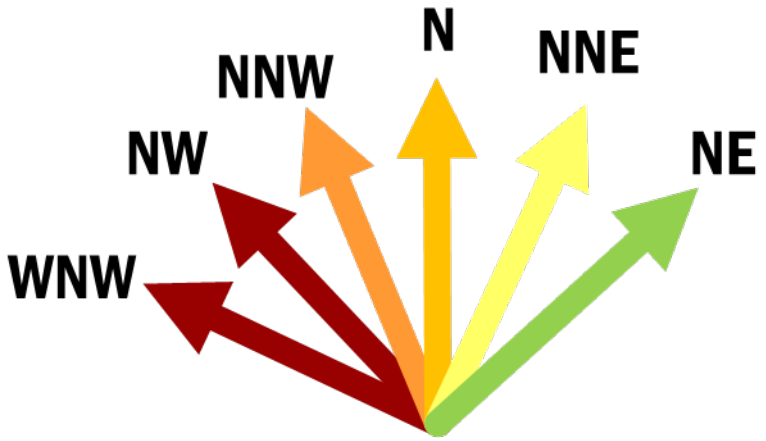
Zone 1 Zone 2 Zone 3
Zone 4 Zone 5 Zone 6

Storm Surge Heights by Direction

Storm Surge Heights

- **Directional MEOW Atlas**
  The direction of approach can be as important as the storm intensity

	WNW	NW	NNW	N	NNE	NE
Category 1	12.6	12.1	10.7	8.8	6.6	5
Category 2	20.9	20	20.1	16.5	11.4	8.1
Category 3	26.6	27.6	27.4	23.4	17	11.3
Category 4	32.4	33.9	33.9	30.6	21.7	14.6



NYC Evacuation Zones

FEMA

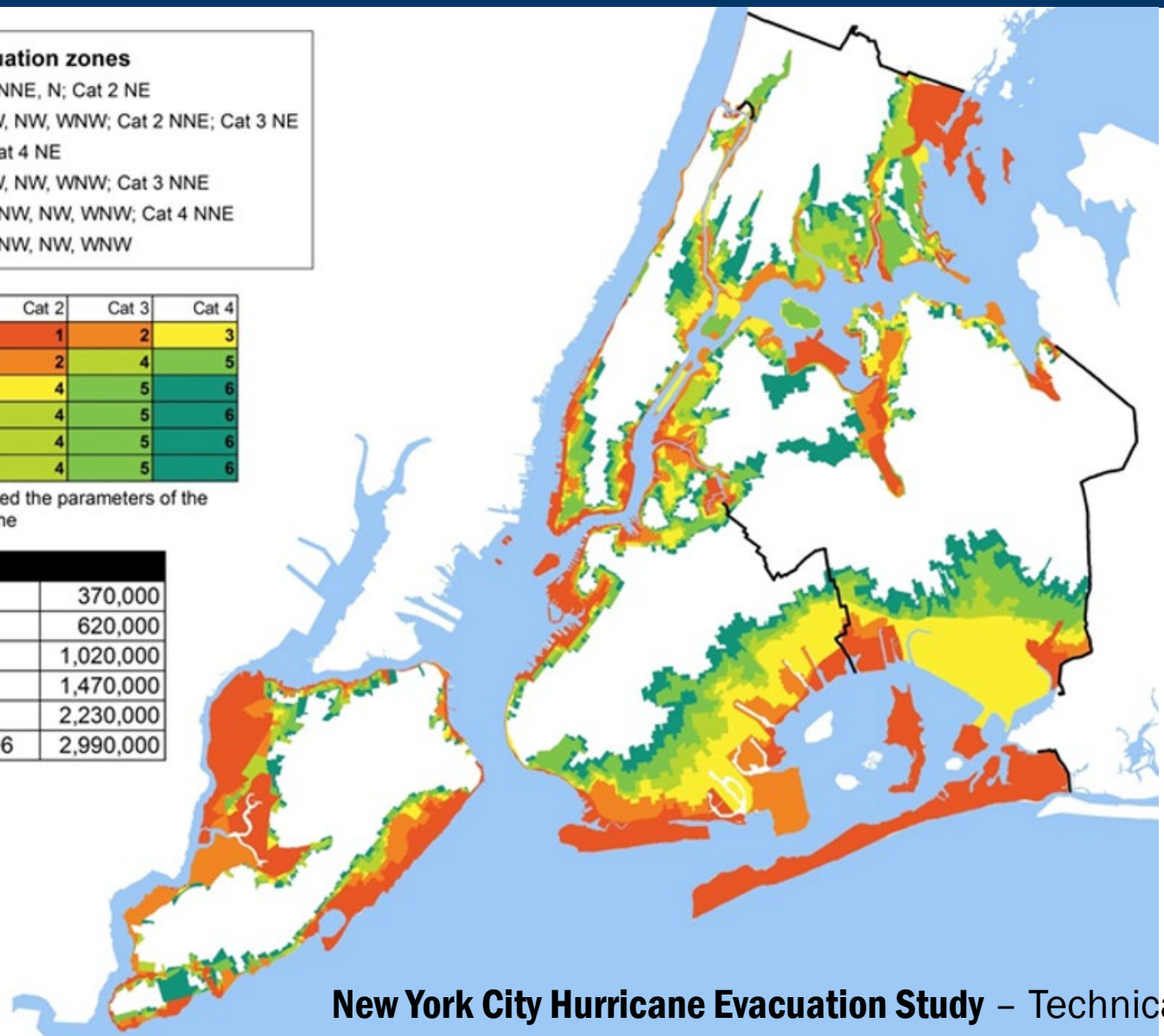
Hurricane evacuation zones

- 1 - Cat 1 NE, NNE, N; Cat 2 NE
- 2 - Cat 1 NNW, NW, WNW; Cat 2 NNE; Cat 3 NE
- 3 - Cat 2 N; Cat 4 NE
- 4 - Cat 2 NNW, NW, WNW; Cat 3 NNE
- 5 - Cat 3 N, NNW, NW, WNW; Cat 4 NNE
- 6 - Cat 4 N, NNW, NW, WNW

	Cat 1	Cat 2	Cat 3	Cat 4
NE	1	1	2	3
NNE	1	2	4	5
N	1	4	5	6
NNW	2	4	5	6
NW	2	4	5	6
WNW	2	4	5	6

* For storms that exceed the parameters of the model, go up one zone

2010 Population	
Zone 1	370,000
Zone 1+2	620,000
Zone 1+2+3	1,020,000
Zone 1+2+3+4	1,470,000
Zone 1+2+3+4+5	2,230,000
Zone 1+2+3+4+5+6	2,990,000



New York City Hurricane Evacuation Study – Technical Data Report – 2015

Frequently Asked Questions 2

FAQs

- Who will be affected?
- What critical facilities are at risk?

- **Vulnerability Analysis**

Who's at Risk from Storm Surge?

Hancock County, MS

County Surge Area	Permanent Residential Structures	Non-Permanent Residential Structures	Total Residential Structures	Commercial Structures	Industrial Structures	Tourist Structures
Category 1	2,281	0	2,281	89	0	1
Category 2	5,007	253	5,330	209	4	2
Category 3	9,059	338	9,397	520	7	9
Category 4	9,480	380	9,860	525	7	9
Category 5	10,020	437	10,457	544	7	9
Non-Surge Area	5,518	682	6,200	99	0	1

Hancock County, MS

Table 3-7: Vulnerable Structures by Storm Surge Area
Mississippi Hurricane Evacuation Study – Technical Data Report – 2012

What Facilities Are at Risk?

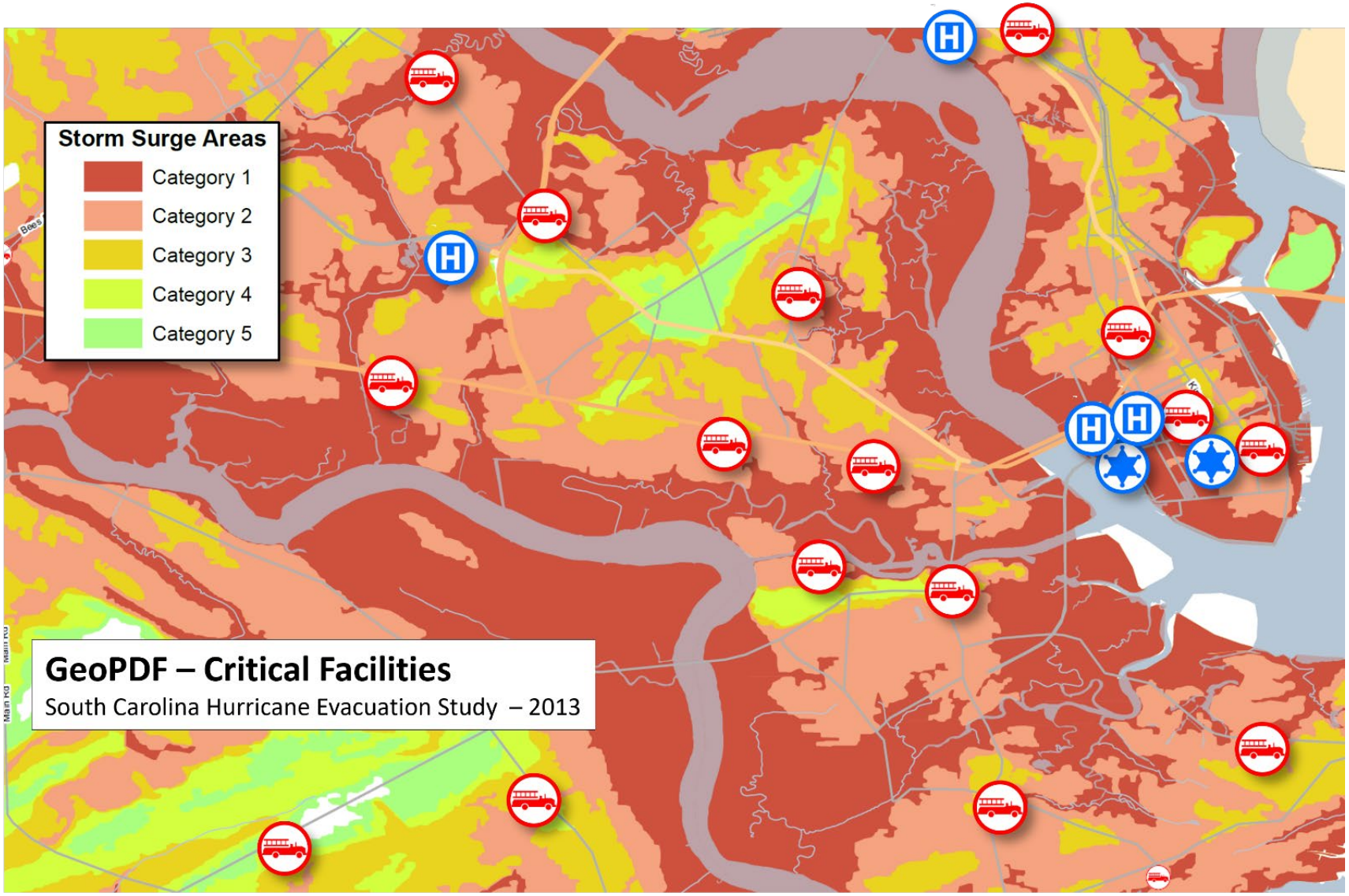
Hancock County, MS

Facility Type	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5	None
Casino	2	-	-	-	-	-
Dam	-	-	-	3	-	19
EOC	-	-	-	-	1	-
Fire	3	2	4	1	1	4
Hazmat	-	4	-	-	-	1
Hospital	-	-	1	-	-	-
Hotels	2	2	5	-	-	1
Police	-	-	4	-	-	-
School	1	3	6	1	-	1
Senior Center	-	-	1	-	-	-
Shelter	-	-	-	-	-	5
TOTAL	7	12	25	6	2	32

Table 3-9: Critical Facilities Summary Table

Mississippi Hurricane Evacuation Study – Technical Data Report – 2012

What Facilities Are at Risk (GIS)?



Frequently Asked Questions 3

FAQs

- Will the public evacuate?
- Where will they go? How? When?
- Do they understand the threat?

- **Behavioral Analysis**

What Are People Thinking?

Survey Results

- **Serious under-concern about storm surge**
- **Evacuation intent often overstated**
- **Evacuation intent highest for:**
  - Major hurricanes
  - Mandatory/Ordered evacuations
  - Households with children
  - People with recent real hurricane experience
- **Often get ‘False Experience’ effect**

Will the Public Evacuate?

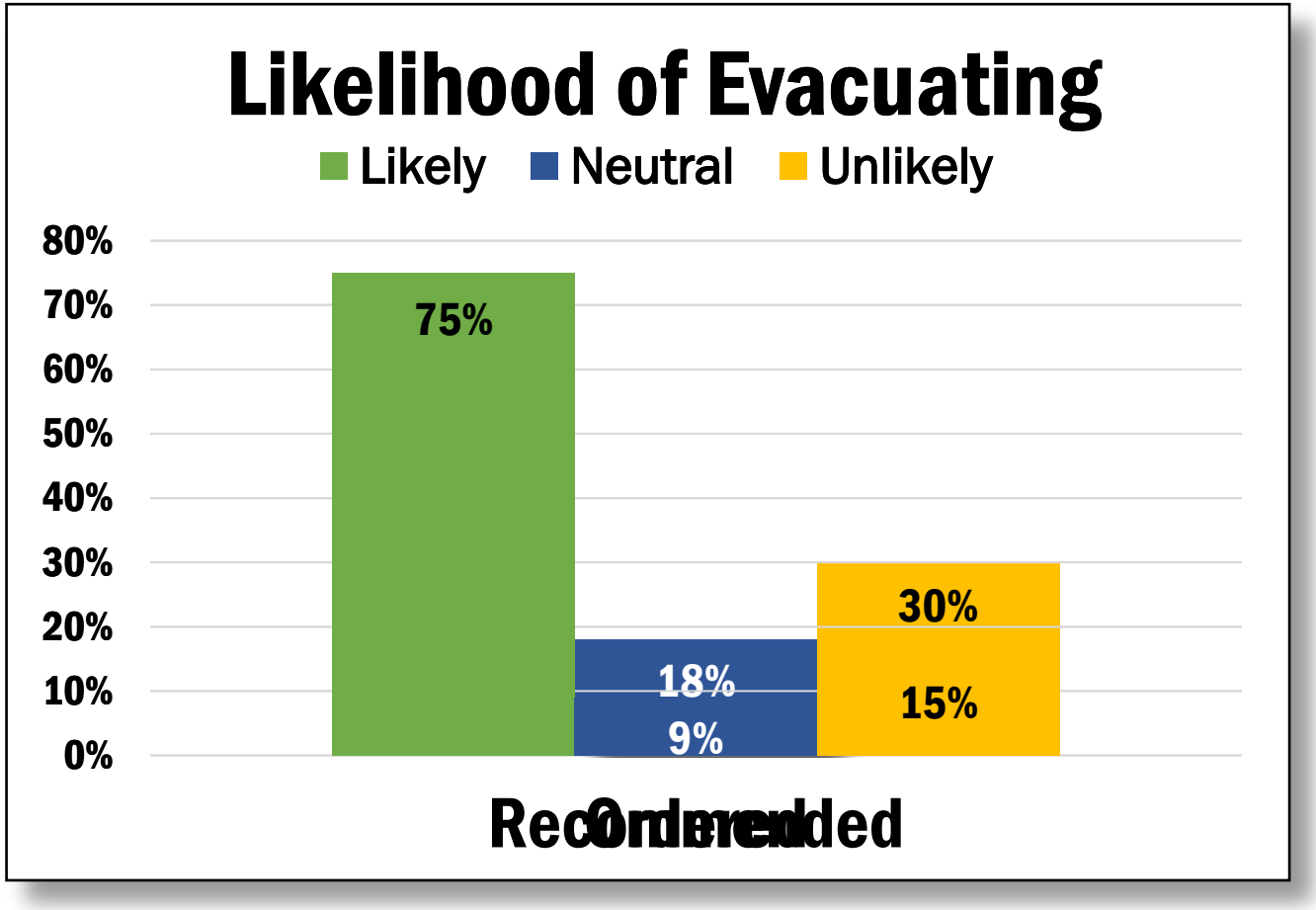
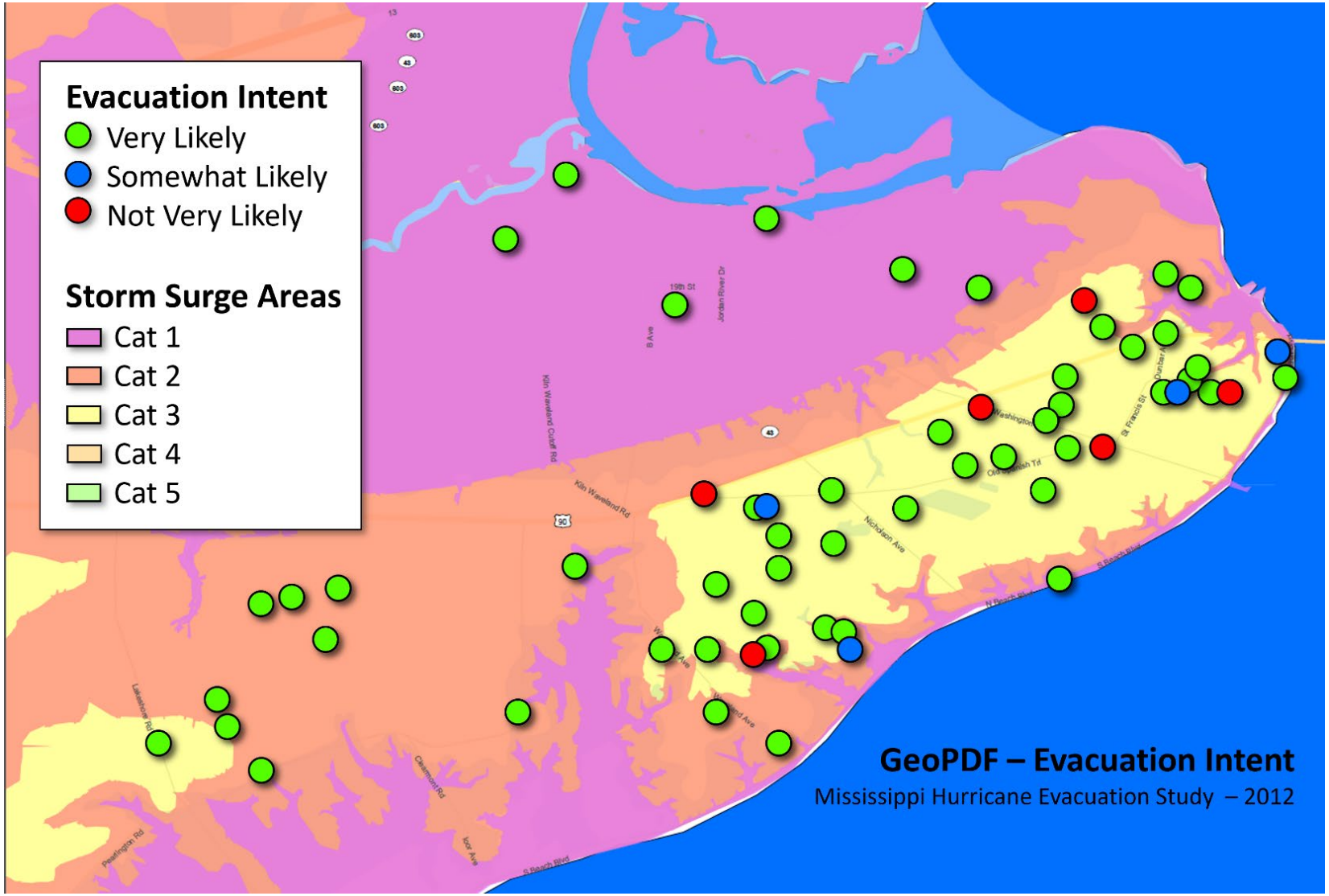


Figure 4-7: Cat 1-2 Hurricane and Likelihood of Leaving if Recommended or Ordered

South Carolina Hurricane Evacuation Study – Technical Data Report – 2013

Where Should I Focus My Outreach?



Bottom Line

Why Do People Evacuate?

- They understand their vulnerability/risk
- They were told to evacuate

Frequently Asked Questions 4

FAQs

- Who will seek public shelter?
- How many shelter spaces are needed?
- In county? Out-of-county?

- **Shelter Analysis**

Number of Shelter Spaces Needed?

Shelter Analysis Results

- **Shelter Locations** with respect to Evacuation Zones and Storm Surge flood risk areas
- **Potential Demand**
- **Identification of Deficits**
- **Shelter Usage Rates** for planning purposes
  - 3% to 8% (Coastal)
  - 10% (Inland)

What's Available?

Baldwin County, AL

Evacuation Scenario	Evacuating Population LOW OCCUPANCY	Evacuating Population HIGH OCCUPANCY	Shelter Demand LOW OCCUPANCY	Shelter Demand HIGH OCCUPANCY	Sheltering Capacity	Surplus/ Deficit LOW OCCUPANCY	Surplus/ Deficit HIGH OCCUPANCY
Category 1	60,660	101,821	1,576	1,990	8,239	6,663	6,249
Category 2	103,871	151,069	2,909	3,384	7,469	4,560	4,085
Category 3	113,773	162,005	3,567	4,052	7,469	3,902	3,417
Category 4	184,748	234,032	8,528	9,025	2,818	**-5,710**	**-6,207**
Category 5	211,125	260,502	10,898	11,295	0	**-10,898**	**-11,395**

Table 5-4: Evacuating Population and Public Sheltering Demand – Baldwin County

Alabama Hurricane Evacuation Study – Technical Data Report – 2012

Resources for Evacuating Populations

Table 6: Population Seeking Shelter and Capacity in Zone 1

Puerto Rico Hurricane Evacuation Study – Shelter Analysis Report – 2015

Shelter Demand	Potential Evacuees	Regular Capacity 7,953 Additional Needed	Emergency Capacity 15,906 Additional Needed	Assessment of Capacity
1%	1,533	0	0	Regular Shelter Capacity Can Support Demand
2%	3,065	0	0	Regular Shelter Capacity Can Support Demand
3%	4,598	0	0	Regular Shelter Capacity Can Support Demand
4%	6,131	0	0	Regular Shelter Capacity Can Support Demand
5%	7,633	0	0	Regular Shelter Capacity Can Support Demand
6%	9,196	1,243	0	Emergency Shelter Capacity Can Support Demand
7%	10,728	2,775	0	Emergency Shelter Capacity Can Support Demand
8%	12,261	4,308	0	Emergency Shelter Capacity Can Support Demand
9%	13,794	5,841	0	Emergency Shelter Capacity Can Support Demand
10%	15,326	7,373	0	Emergency Shelter Capacity Can Support Demand
13%	19,924	11,971	4,018	Over Capacity
15%	22,990	15,037	7,084	Over Capacity
20%	30,653	22,700	14,747	Over Capacity

Frequently Asked Questions 5

FAQs

- Where will traffic back up?
- What is the road capacity?
- How long will it take to evacuate?

- **Transportation Analysis**

How Long Will It Take to Evacuate?

Traffic Model Inputs

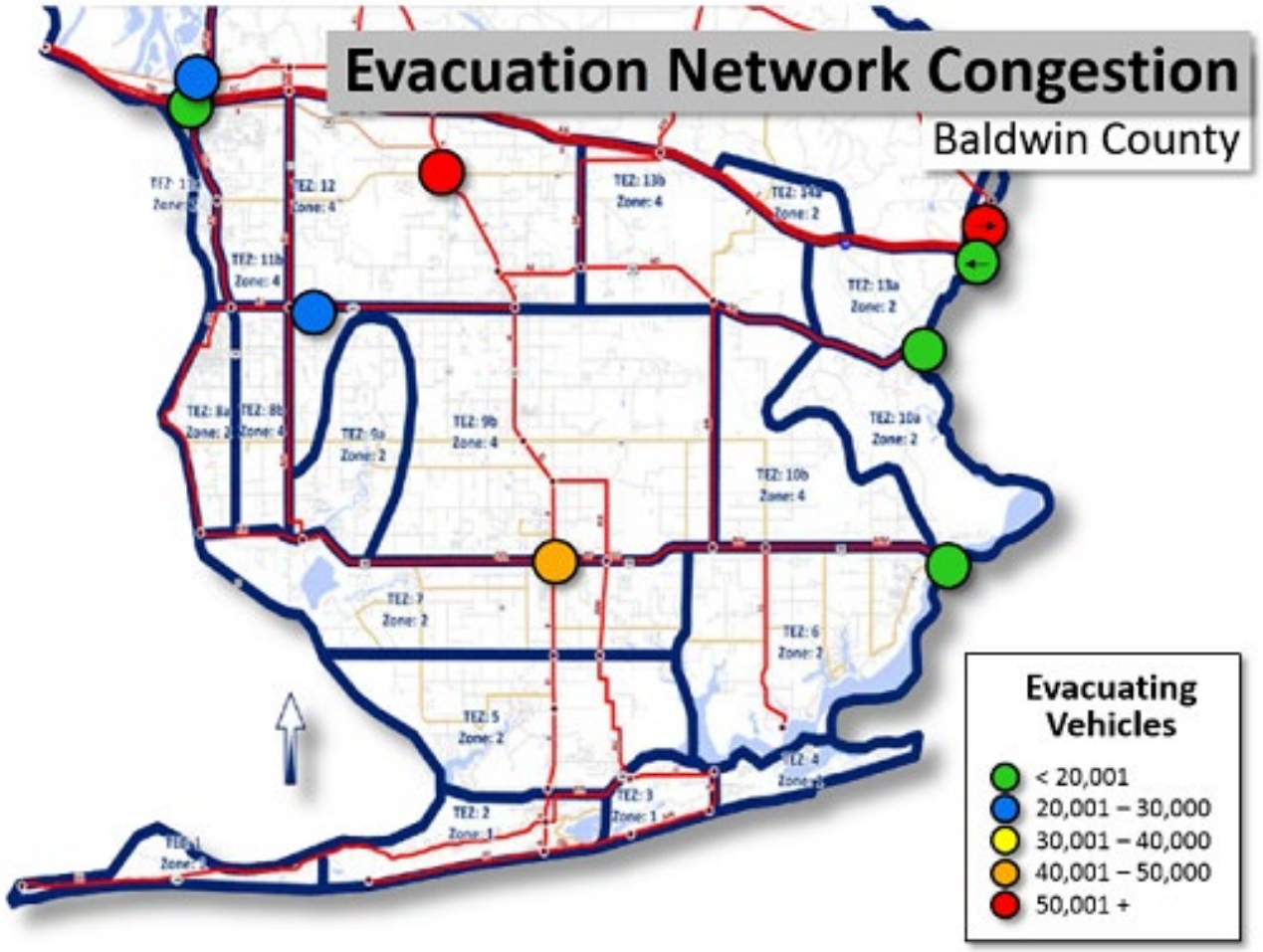
- Demographics
- Behavioral Assumptions
- Evacuation Routes
- Roadway Capacities
- Travel Destinations
- Evacuation Scenarios

Where Will the Traffic Problems Be?

FEMA

Transportation Analysis

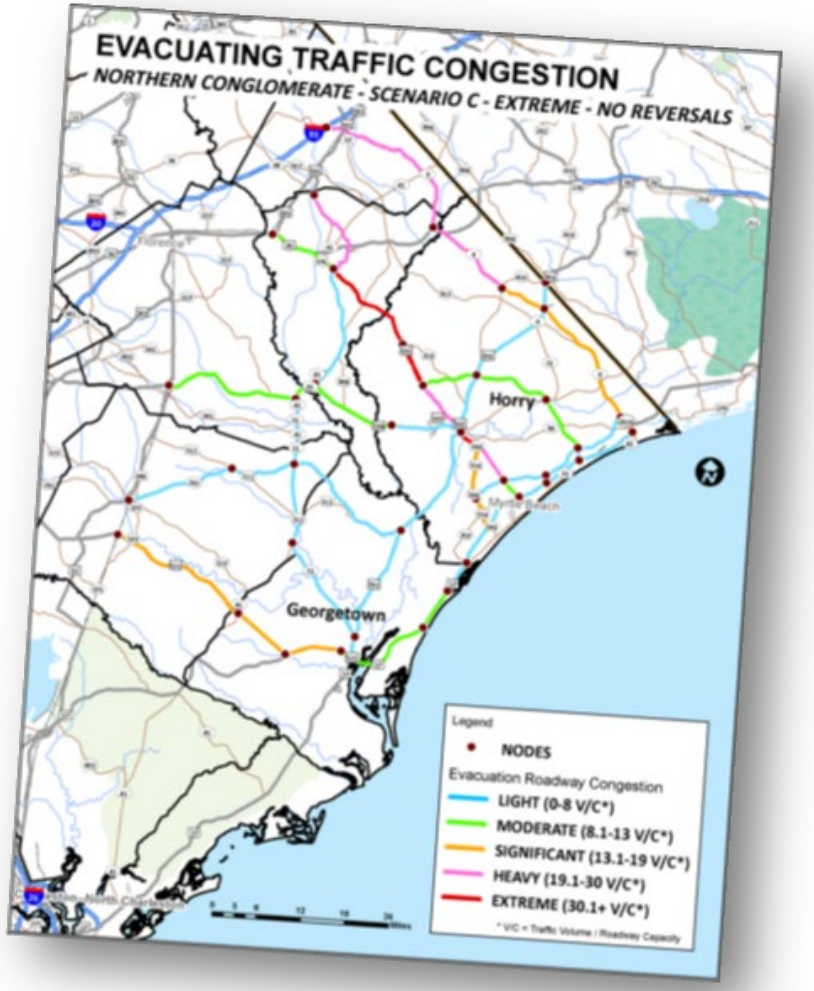
- **Traffic Patterns**
  - Bottlenecks
  - Evacuating Vehicles
- **Clearance Times**
  - Response Rate
  - Seasonal Population
  - Evacuation Scenarios
    one-way, multi-state, etc.



Modeled on the Road Network

Clearance Times

- **Time for the evacuating population to reach a point of safety**
  - First evacuating vehicle enters the road network
  - Last vehicle reaches an assumed point of safety
  - Includes travel time and waiting in congestion
  - Doesn't relate to any one particular vehicle
  - Driven by bottlenecks



How Long Should Evacuation Take?

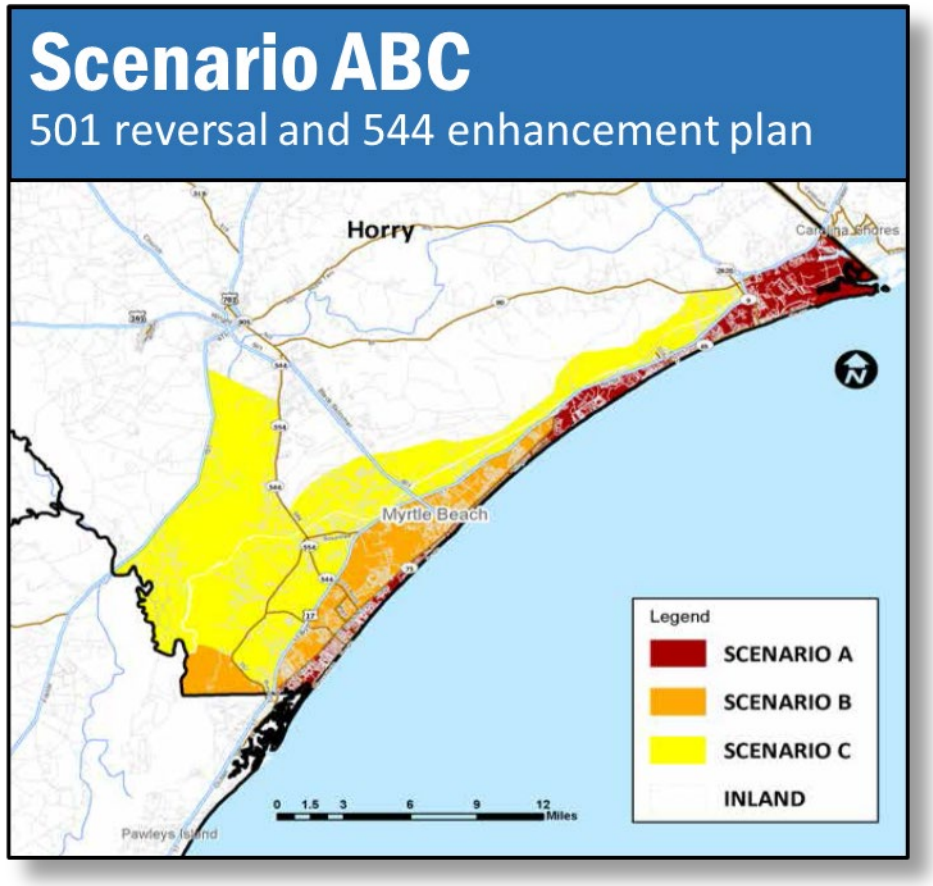


Figure 6-6: Evacuation Zones

South Carolina Hurricane Evacuation Study – Technical Data Report – 2013

Horry County, SC

Scenario ABC (501 Reversal and 544 enhancement plan)

Response	Low Occupancy	Med Occupancy	High Occupancy	Extreme Occupancy
SLOW	22	26	29	31
MEDIUM	20	24	27	29
FAST	19	23	26	28
IMMEDIATE	18	22	25	27

Table 6-44: Evacuation Clearance Times – Scenario ABC

South Carolina Hurricane Evacuation Study – Technical Data Report – 2013

The Process: Plan

Trust the Process

- **Step 1**
  Form a Collaborative Planning Team.
- **Step 2**
  Understand the Situation.
- **Step 3**
  Determine Goals and Objectives.
- **Step 4**
  Plan Development.
- **Step 5**
  Plan Preparation, Review & Approval.
- **Step 6**
  Plan Implementation & Maintenance.

Frequently Asked Questions 6

FAQs

- What forces us to react?
- What is acceptable risk?
- What assumptions can I make?

- **Identify Hazard Triggers**

What Forces You to Act?

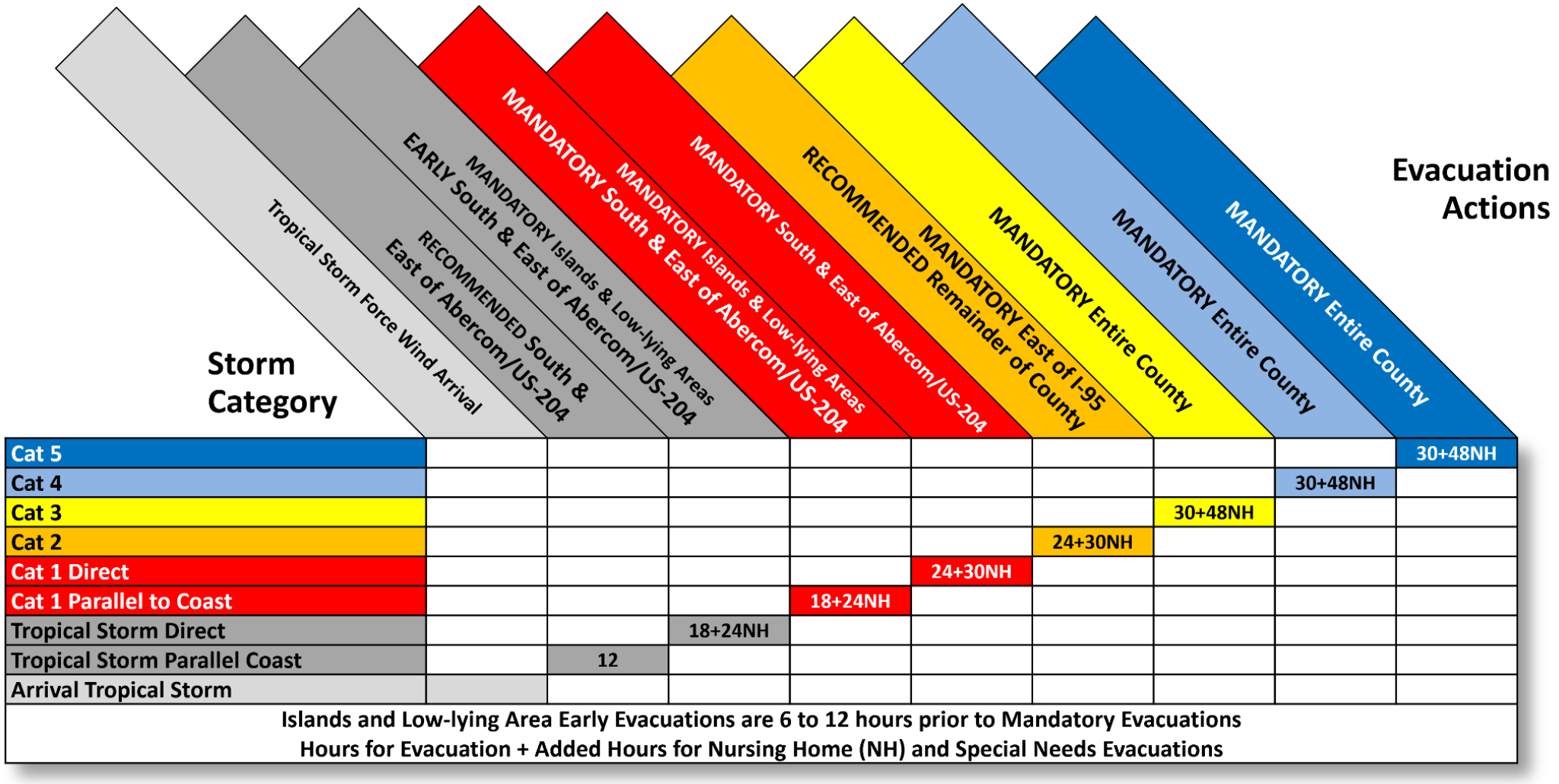
Lane Reversal Decision Factors

Decision Factor	Indicator
The storm's current/projected intensity and the public perception of the threat to their safety.	**Category 3 or greater storm** portrayed through the media as a significant threat will probably require the use of lane reversal.
Tourism occupancy: High tourist occupancy greatly increases evacuating population and thereby increases traffic congestion.	**For a Category 1 or 2 storms**, monitor traffic flow and have lane reversal ready. **A Category 3 or greater storm** will indicate the need for reversal. (Note: Beaufort County requires Highway 278 reversal during tourist season at 85% tourist occupancy)

South Carolina Lane Reversal Factors

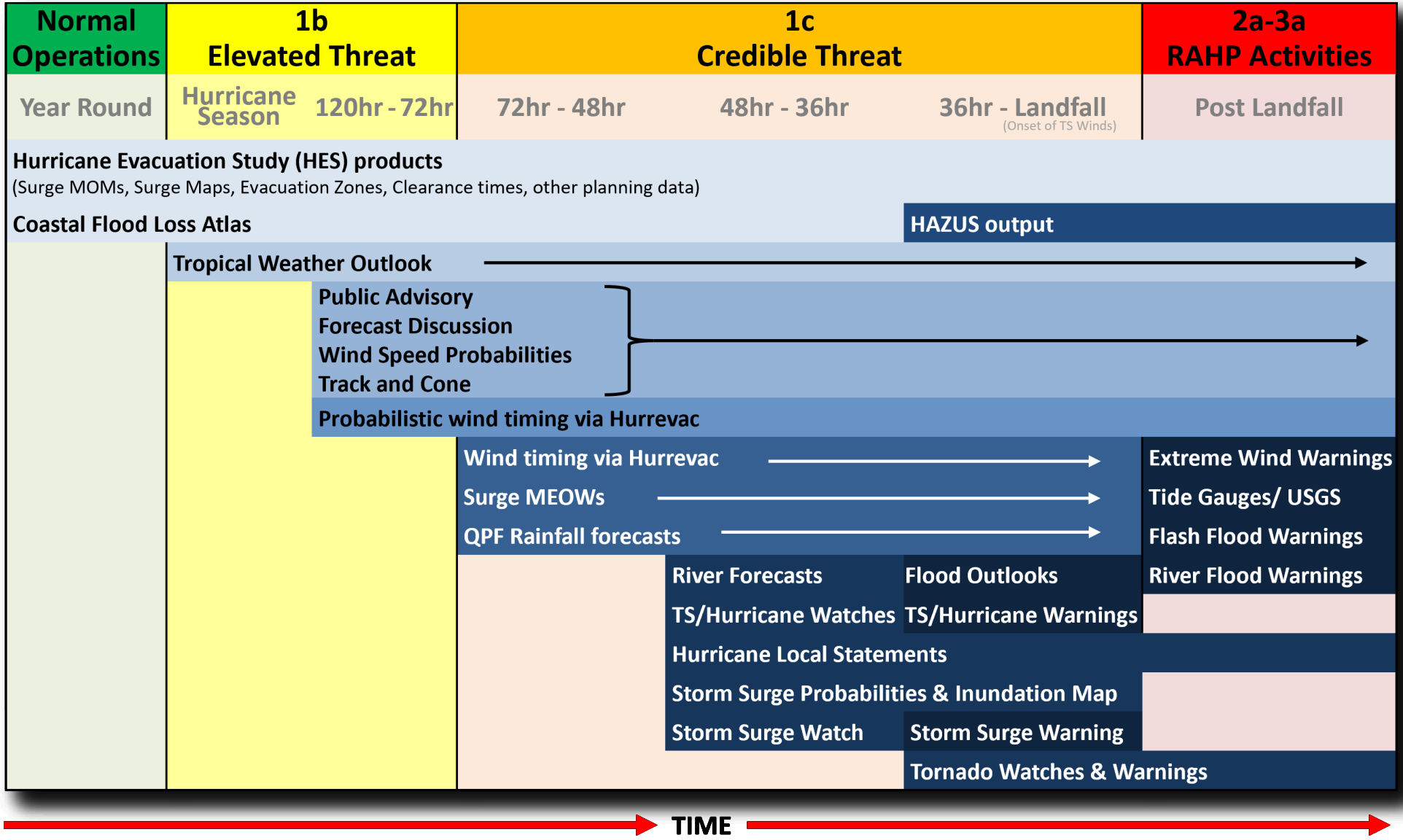
South Carolina Hurricane Plan 2015

Storm Category vs. Evac Actions



Chatham County Evacuation Guidelines (Not Current)

When is Key Info Available?



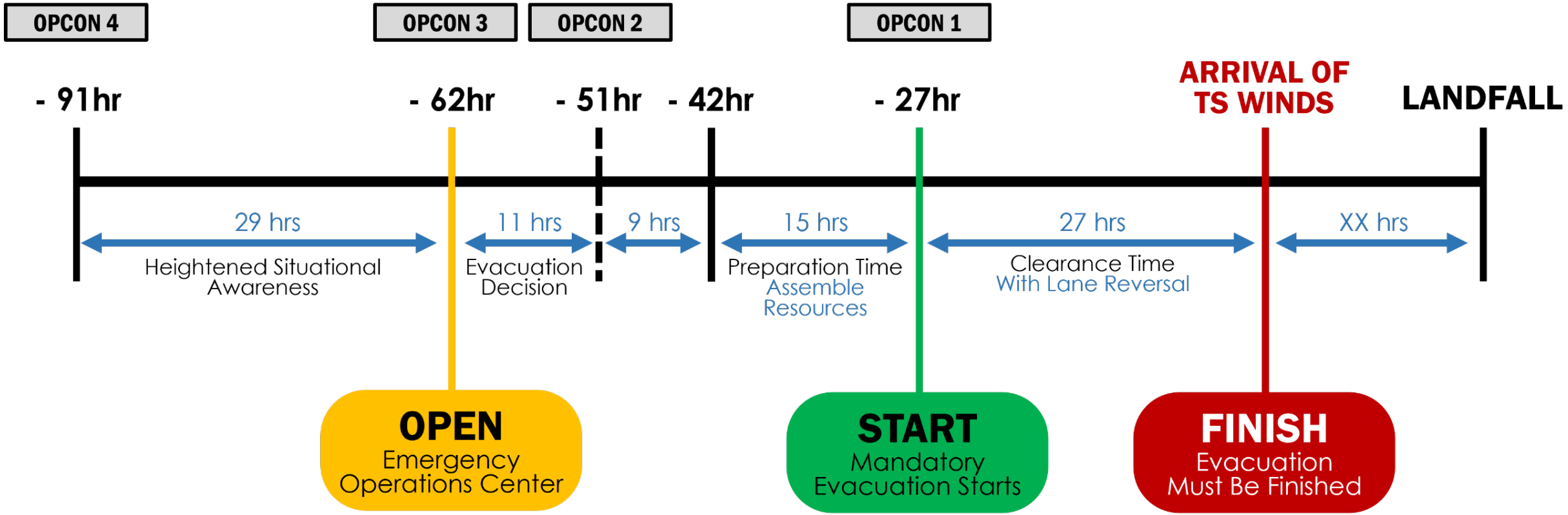
Frequently Asked Questions 7

FAQs

- When do we open shelters?
- When do we need to deploy?
- How do we stay synchronized?

- **Decision Timelines**

Evacuation Scenario Decision Timeline



Horry County Evacuation Timeline for ABC Scenario

Hurricane Readiness Checklist

FEMA

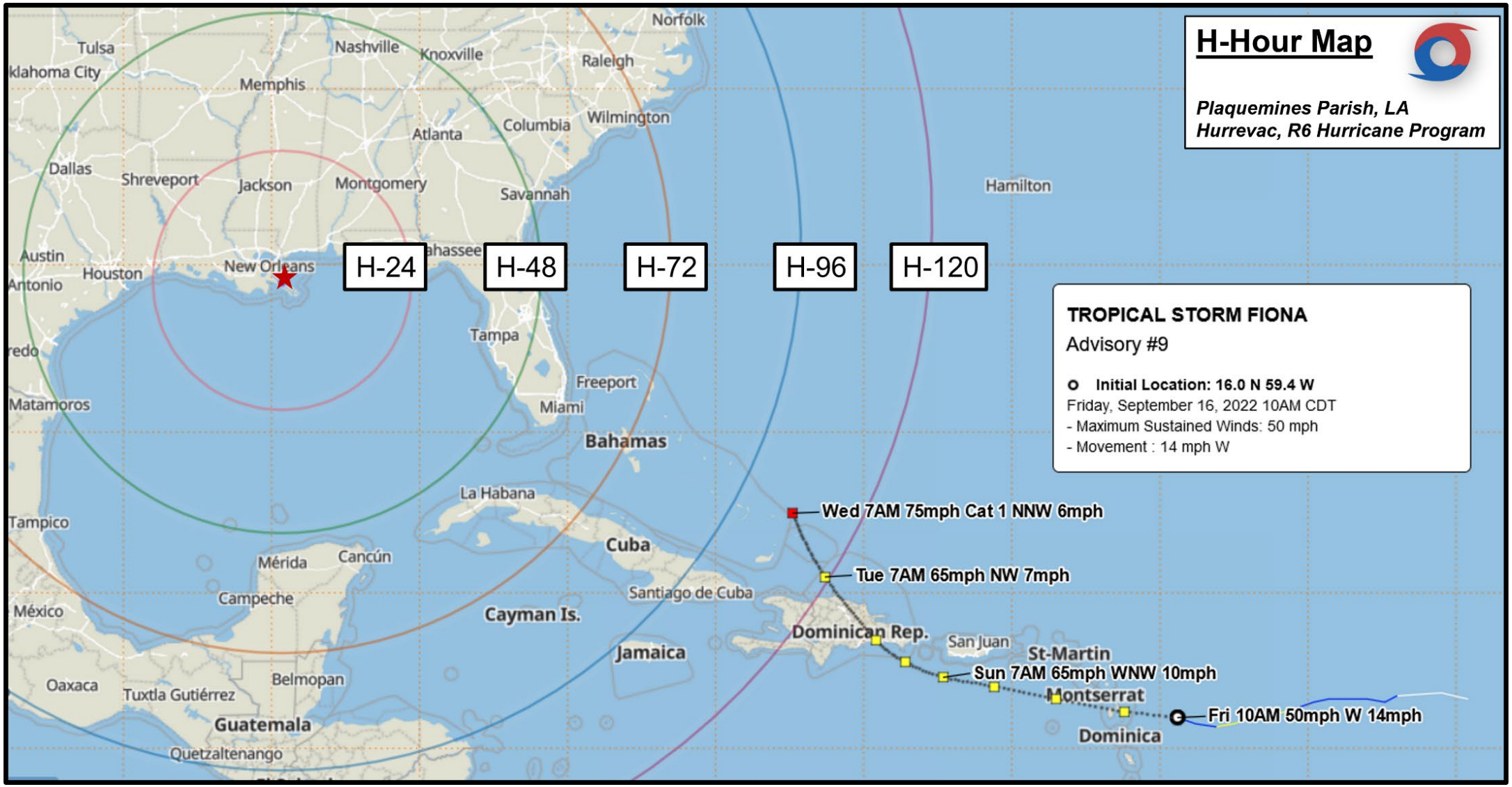
Hurricane Preparedness – prior to June 1	PRIORITY LEVEL	PERSONNEL RESPONSIBLE	STATUS OF TASK	DATE/TIME COMPLETED
Hurricane Planning				
• Update local hurricane operation, evacuation plans and resource files				
• Revise Standard Operating Procedures (SOPs)				
• Review local emergency management ordinances and update				
• Test HURREVAC and/or other hurricane tracking software				
• Review Stafford Act Policies with State Emergency Management				
• Determine evacuation decision making authority w/ line of succession				
Emergency Operations Center (EOC)				
• Replenish supplies and check equipment				
• Test communication lines				
• Update activation plans and train staff				
• Update HURREVAC to latest version				

Hurricane Readiness Checklist 2

FEMA

Storm Impacts Imminent (~36 hours) Hurricane Watches and Warnings Issued	PRIORITY LEVEL	PERSONNEL RESPONSIBLE	STATUS OF TASK	DATE/TIME COMPLETED
Storm Watch				
• Conference calls with NOAA local WFO/RFC/SPC				
• Continue to monitor HURREVAC and other systems				
• Monitor storm track and provide local government officials updates				
• Anticipate the possible arrival of rainfall and tornados				
• Monitor river stages and rainfall forecast				
Emergency Operations Center (EOC)				
• Activate EOC (partial or full based on clearance times and threat)				
• Request primary ESF support agencies provide EOC briefings				
• Complete and distribute EOC situation reports, as applicable				
• Prepare EOC facility- Mitigate for Winds, Water, etc.				

Time-Based Planning Assumptions



The Process: Execute

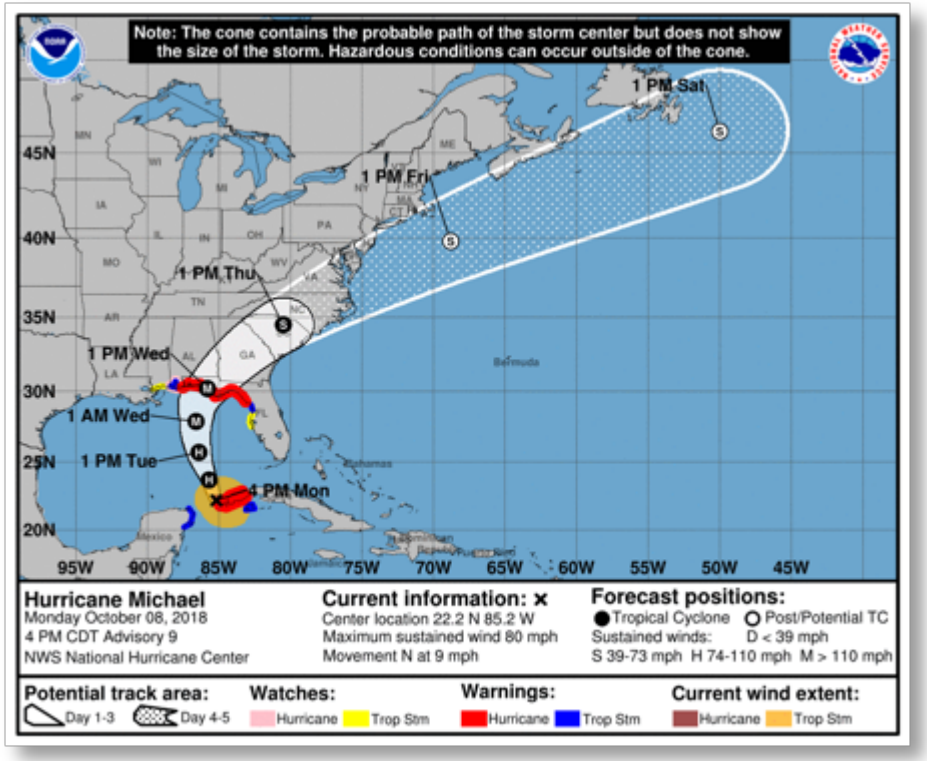
Frequently Asked Questions 8

FAQs

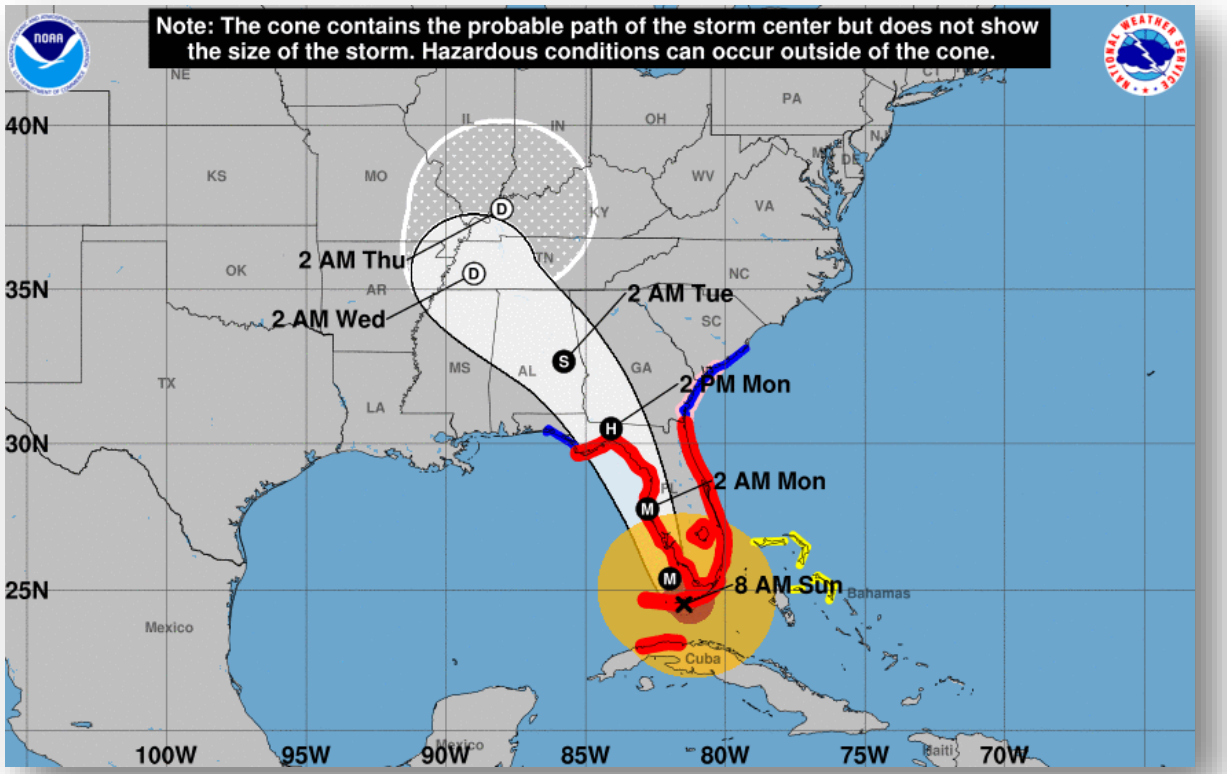
- What's the forecast?
- A threat to my community?
- When are hazards expected?

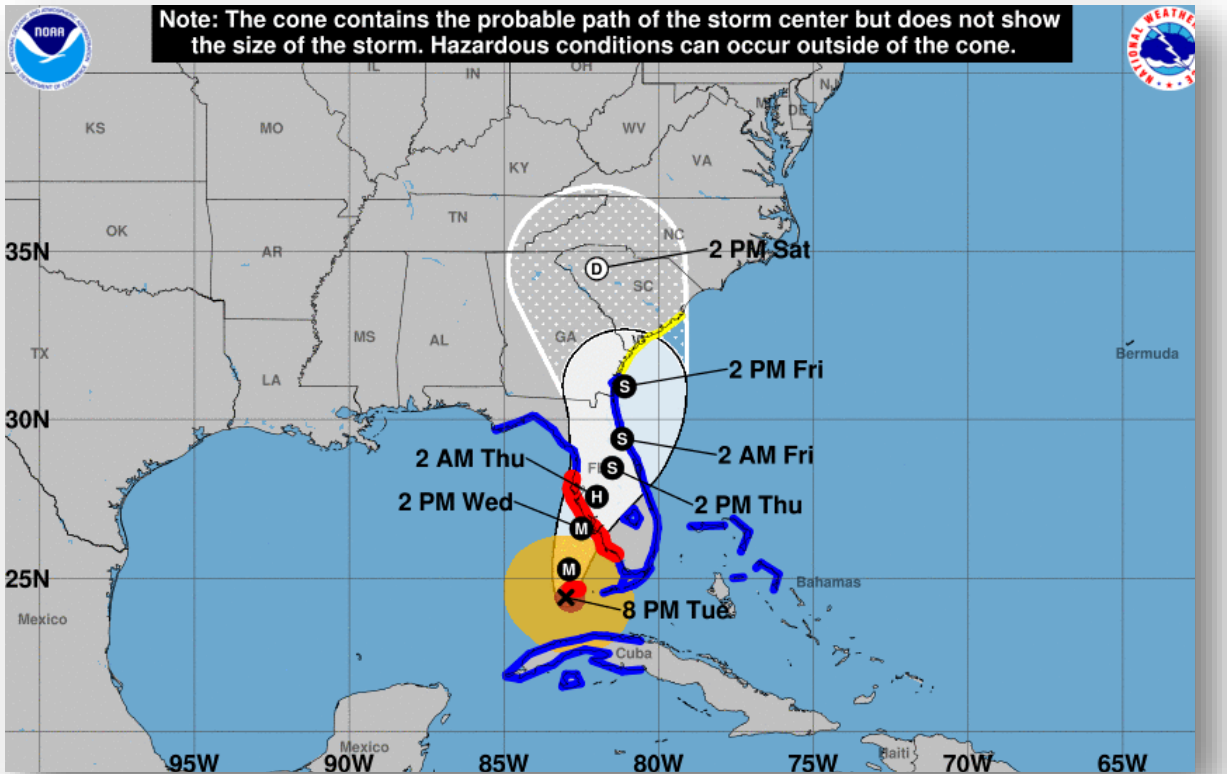
- **NHC Forecasts**

What NHC Forecasts?



Storm Characteristics





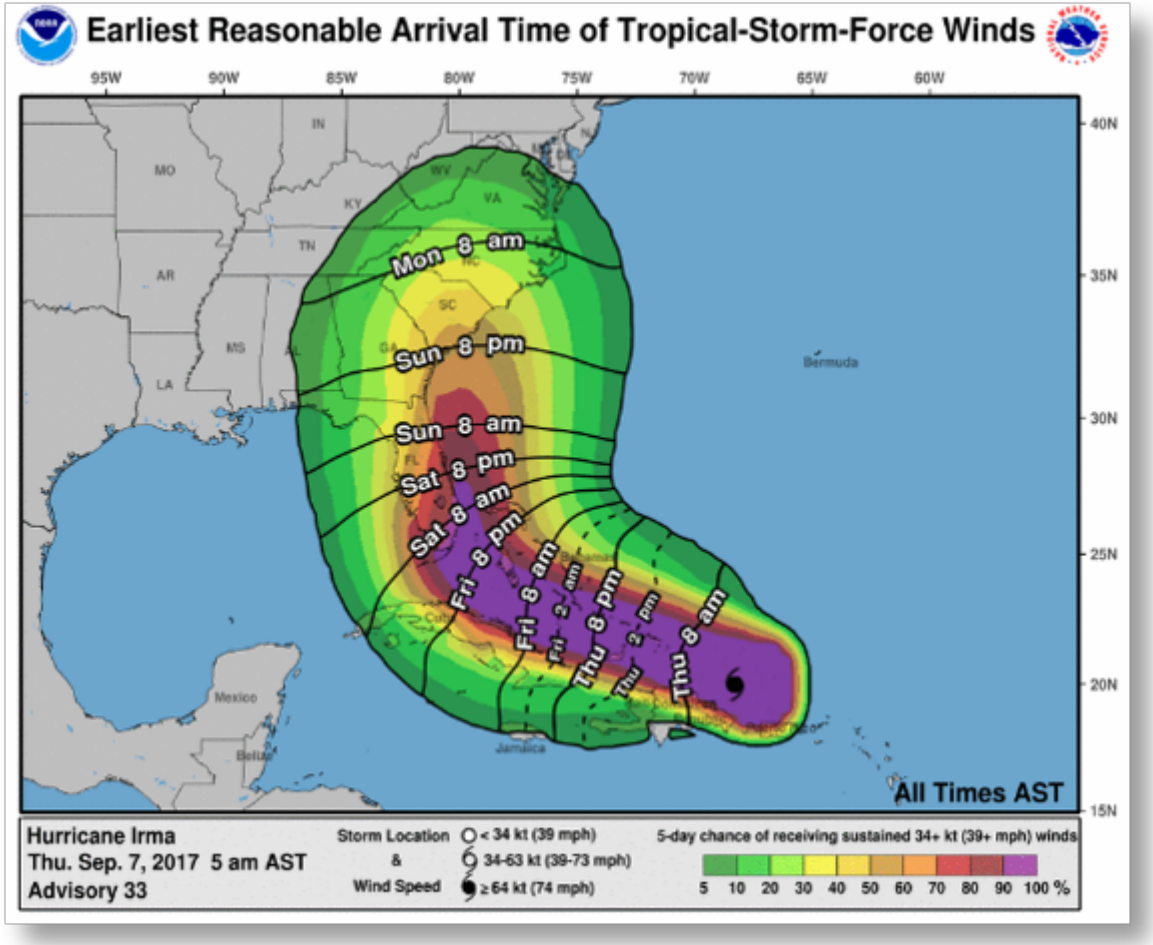
Where Is the Storm Going?

NATIONAL HURRICANE CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

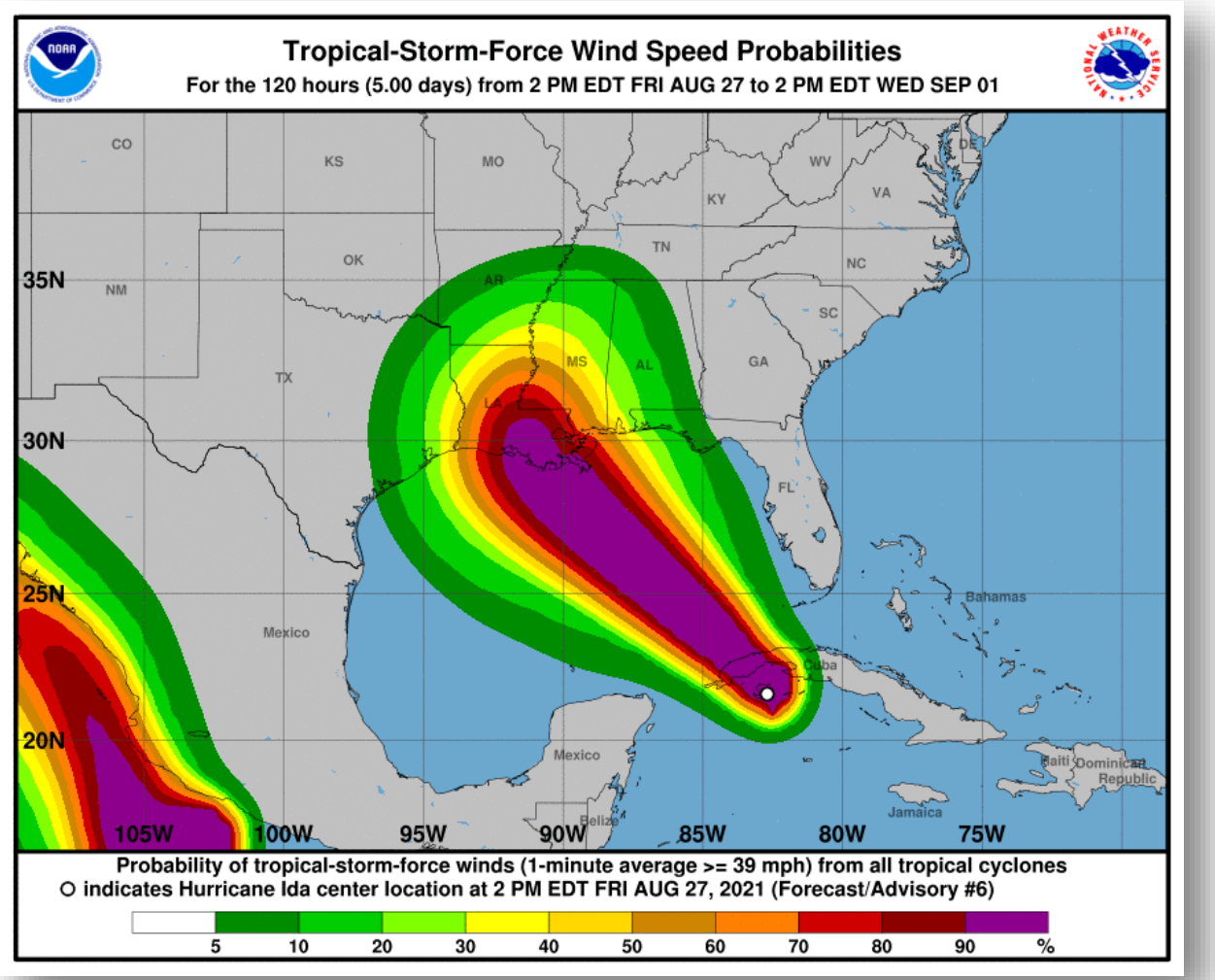
TROPICAL STORM ISAAC WIND SPEED PROBABILITIES NUMBER 21
NWS NATIONAL HURRICANE CENTER MIAMI FL AL092012
0900 UTC SUN AUG 26 2012

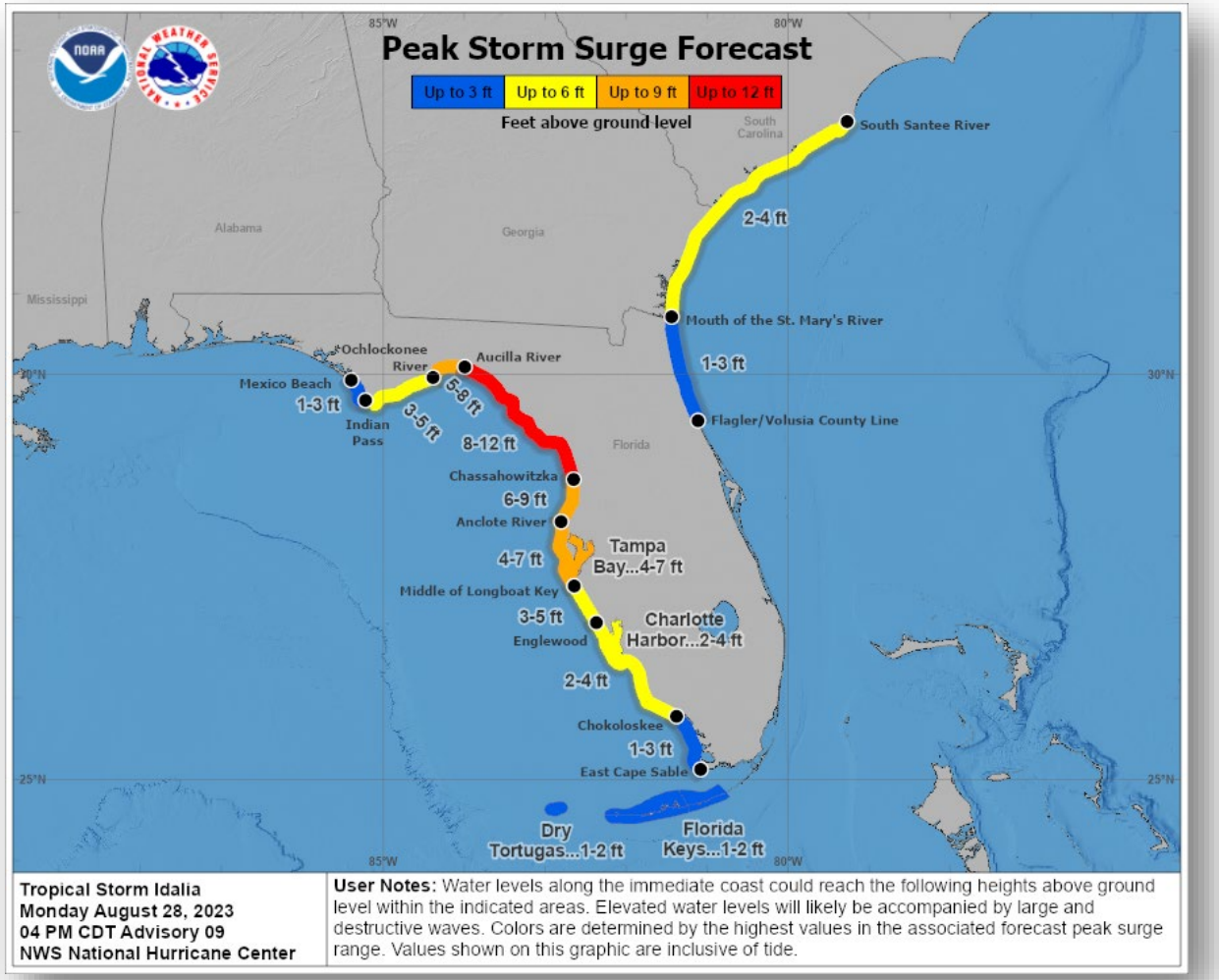
- - - - WIND SPEED PROBABILITIES FOR SELECTED LOCATIONS - - - -

TIME PERIODS	FROM 12Z WED TO 00Z THU	FROM 00Z THU TO 12Z THU	FROM 12Z THU TO 00Z FRI	FROM 00Z FRI TO 12Z FRI	FROM 12Z FRI TO 12Z SAT	FROM 12Z SAT TO 12Z SUN	FROM 12Z SUN TO 12Z MON
FORECAST HOUR	(12)	(24)	(36)	(48)	(72)	(96)	(120)
LOCATION KT							
PANAMA CITY FL 34	X	3(3)	22(25)	30(55)	16(71)	2(73)	1(74)
PANAMA CITY FL 50	X	X(X)	1(1)	13(14)	15(29)	2(31)	1(32)
PANAMA CITY FL 64	X	X(X)	X(X)	3(3)	6(9)	2(11)	1(12)
PENSACOLA FL 34	X	X(X)	10(10)	32(42)	31(73)	5(78)	X(78)
PENSACOLA FL 50	X	X(X)	X(X)	6(6)	28(34)	5(39)	1(40)
PENSACOLA FL 64	X	X(X)	X(X)	1(1)	14(15)	3(18)	X(18)
MOBILE AL 34	X	X(X)	5(5)	24(29)	35(64)	8(72)	1(73)
MOBILE AL 50	X	X(X)	X(X)	3(3)	22(25)	8(33)	1(34)
MOBILE AL 64	X	X(X)	X(X)	1(1)	8(9)	4(13)	1(14)



Evaluate the Storm Threat





Frequently Asked Questions 9

FAQs

- What is the forecast?
- Evacuation start times?

- **HURREVAC**

HURREVAC – Knowledge Check

Do you have a HURREVAC account?

A. Yes, and I use it regularly.

B. Yes, but I am unfamiliar with how to use it.

C. I just registered for an account.

D. I do not have an account.

FEMA

HURREVAC

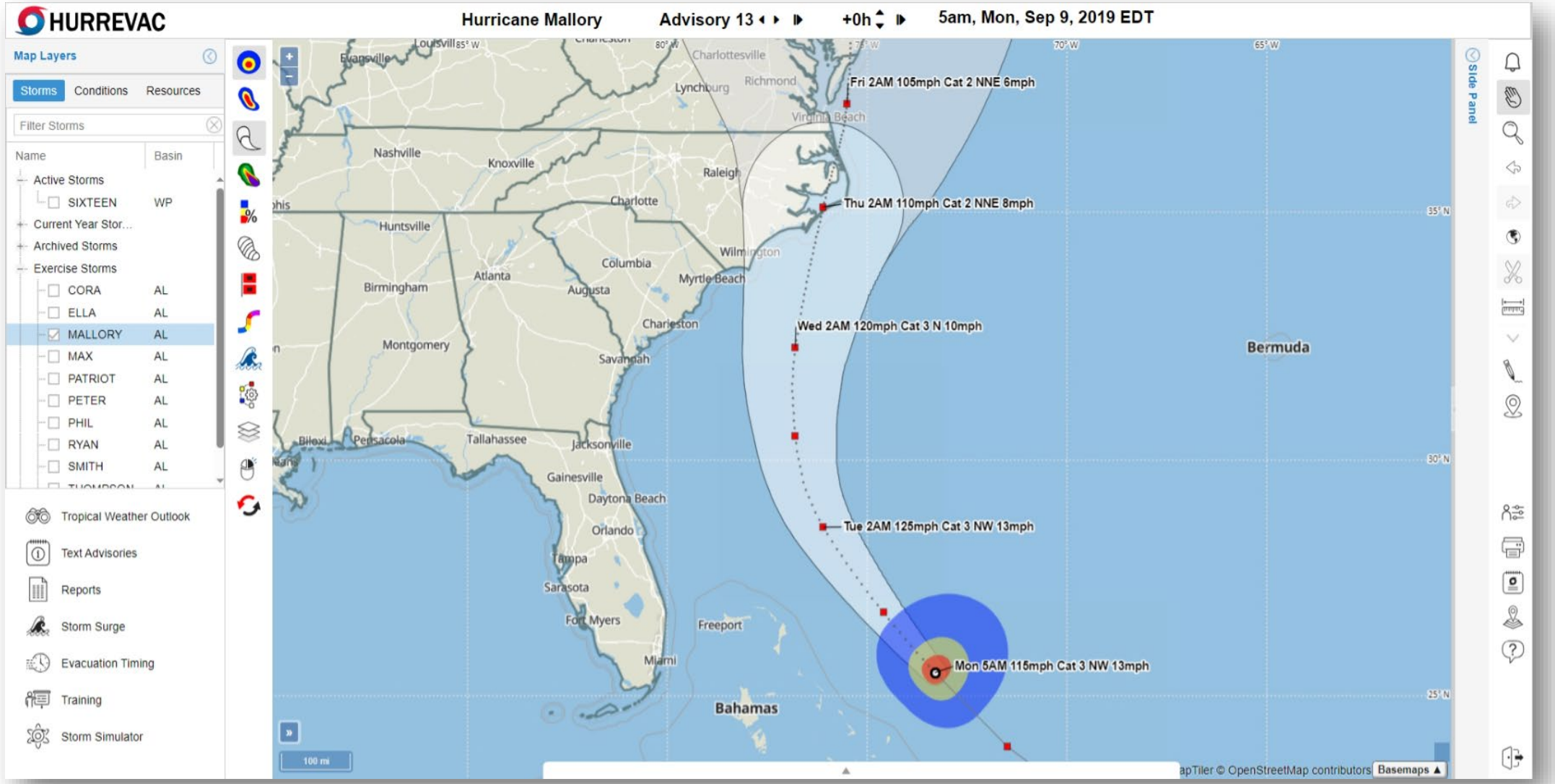
- **Hurricane tracking and decision support tool**
  - Uses NHC forecast data
  - Calculates evacuation start times
- **A resource for EMs during evacuations**
  - Common forecast picture
- **Reports**
  - Wind timing
  - Evacuation timing
  - Storm summary

HURREVAC 2

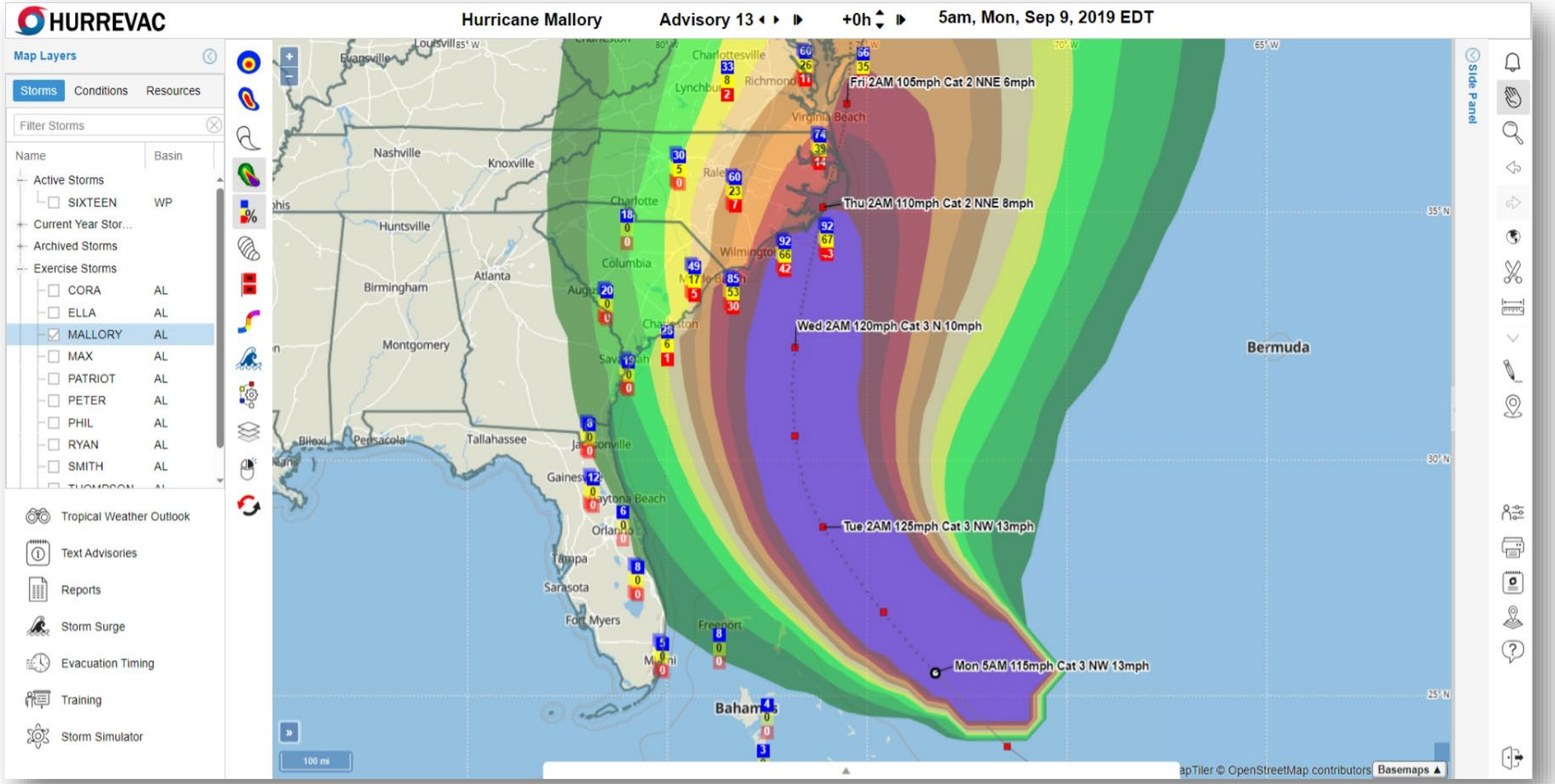
HURREVAC

- **Web-based**
  - No downloads or software to install
  - Use your computer, tablet, or phone
  - Access your profile/preferences anywhere
- **SLOSH Display**
  - MOMs & MEOWs
  - MEOW mixer
- **Register online**
  - https://register.hurrevac.com/

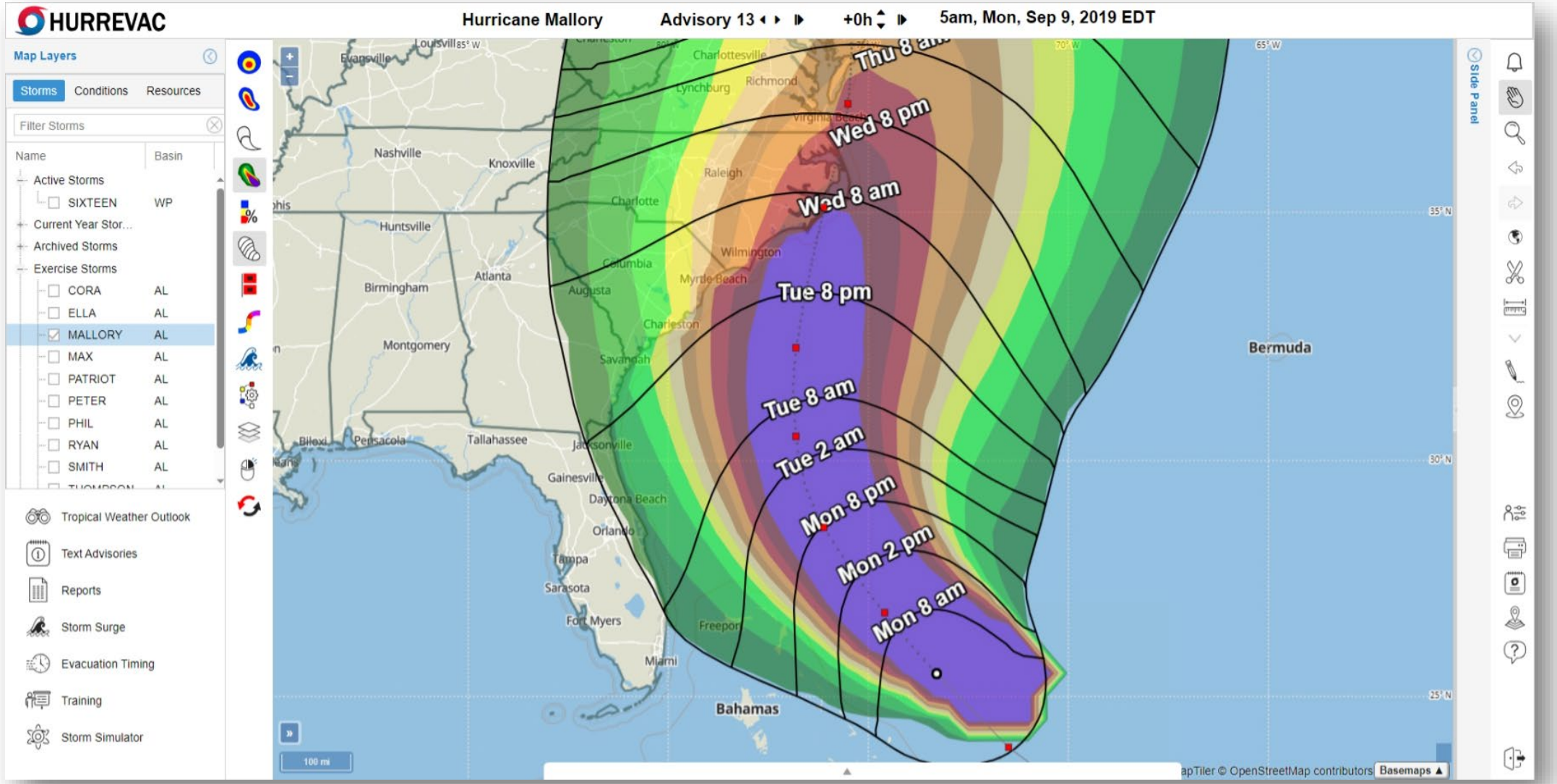
Forecast Track



Wind Threat – Probabilities



Wind Threat - Time of Arrival



Wind Timing – Report

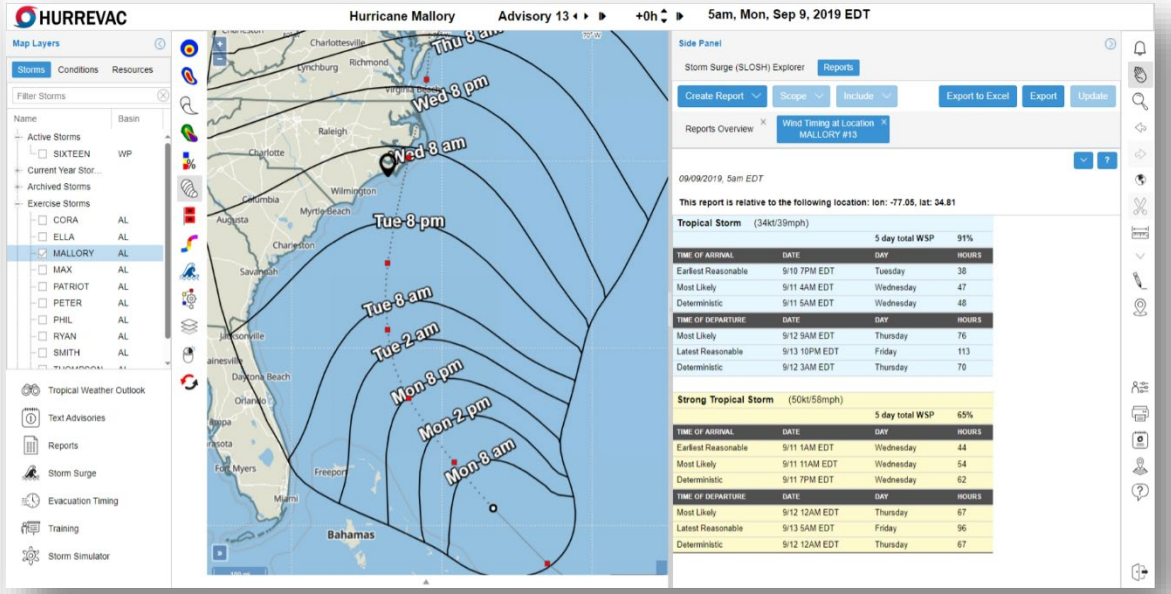
Reports Overview | Wind Timing at Location MALLORY #13

09/09/2019, 5am EDT

This report is relative to the following location: lon: -77.05, lat: 34.81

Tropical Storm (34kt/39mph)

		5 day total WSP	**91%**
TIME OF ARRIVAL	**DATE**	**DAY**	**HOURS**
Earliest Reasonable	9/10 7PM EDT	Tuesday	38
Most Likely	9/11 4AM EDT	Wednesday	47
Deterministic	9/11 5AM EDT	Wednesday	48
TIME OF DEPARTURE	**DATE**	**DAY**	**HOURS**
Most Likely	9/12 9AM EDT	Thursday	76
Latest Reasonable	9/13 10PM EDT	Friday	113
Deterministic	9/12 3AM EDT	Thursday	70



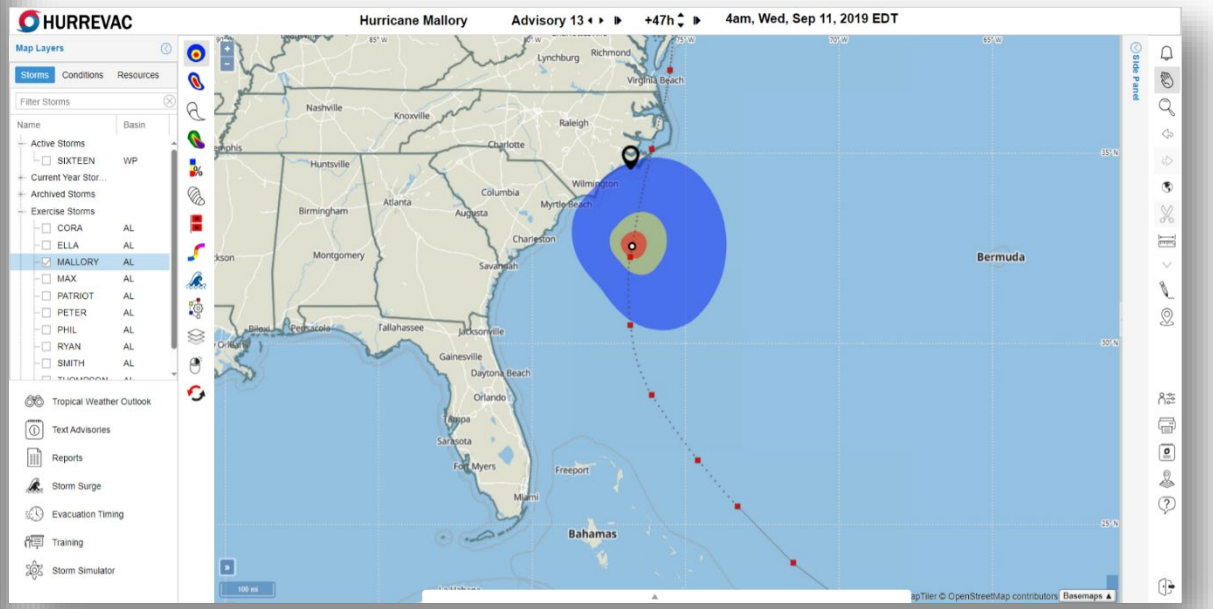
Wind Timing – All Affected Areas

Wind Timing
MALLORY #13

The purpose of the wind timing table is to show when specific wind thresholds are expected to be exceeded at a particular location.

Displaying data in NC for: Counties

State	County	34kt Start	50kt Start	64kt Start	64kt End	50kt End	34kt End
NC	Carteret	09/11 3am	09/11 1pm	09/11 5pm	09/12 3am	09/12 3am	09/12 3am
NC	New Hanover	09/11 3am					09/12 3am
NC	Brunswick	09/11 3am					09/12 3am
NC	Onslow	09/11 4am	09/11 6pm			09/11 10pm	09/12 3am
NC	Jones	09/11 5am	09/11 7pm			09/12 12am	09/12 3am
NC	Craven	09/11 5am	09/11 5pm			09/12 3am	09/12 3am
NC	Pender	09/11 5am					09/12 3am
NC	Hyde	09/11 6am	09/11 4pm	09/11 9pm	09/12 3am	09/12 3am	09/12 3am
NC	Dare	09/11 6am	09/11 5pm	09/11 11pm	09/12 3am	09/12 3am	09/12 3am
NC	Pamlico	09/11 6am	09/11 6pm	09/12 12am	09/12 3am	09/12 3am	09/12 3am
NC	Beaufort	09/11 7am	09/11 8pm			09/12 3am	09/12 3am
NC	Duplin	09/11 8am					09/12 3am



Evacuation Start Times

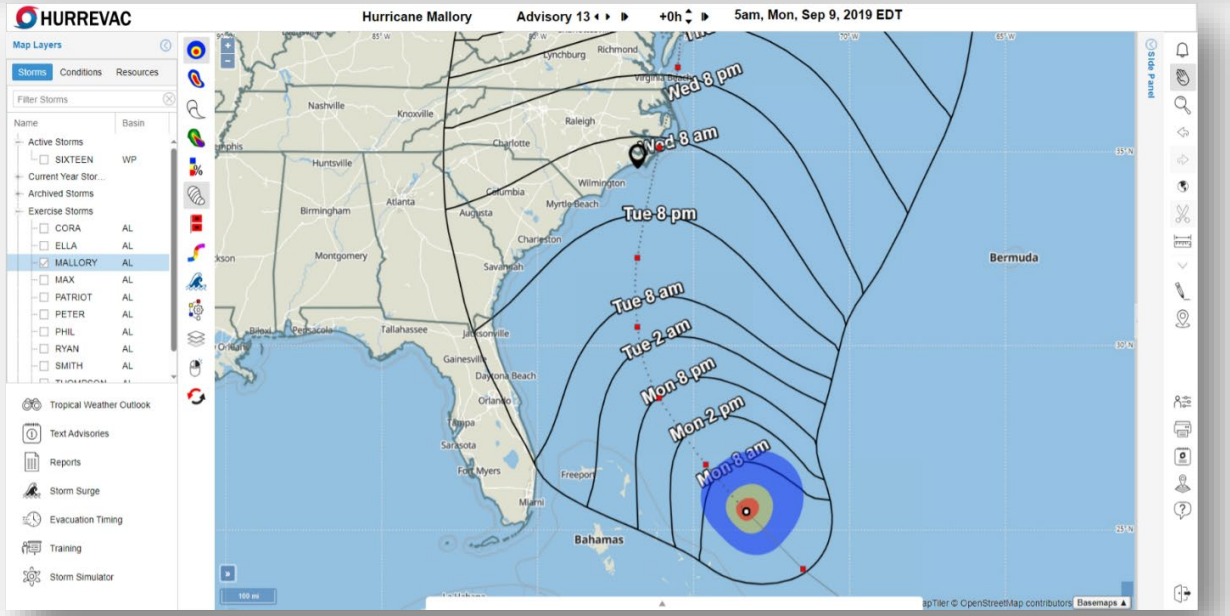
Evacuation Timing
MALLORY #13

09/09/2019, 5:00 am

The purpose of the evacuations timing table is to show, for each location, when the onset of tropical-storm-force winds is expected and provide the earliest and latest times for making evacuation decisions based on the range of evacuation scenarios and settings that the user has selected.

This report uses your saved Evacuation Scenarios and Timeline actions.

State	County	Scenario	Earliest-Reasonable TS Onset Time	Most-Likely TS Onset Time	Clearance Time	Earliest Evac Start Time	Latest Evac Start Time	TS WSP (%)
NC	Carteret	B/Slow/Worst/County	Tue 07 PM	Wed 04 AM	39 hrs	Mon 04 AM	Mon 01 PM	93
NC	Carteret	B/Mod/Med SP/County	Tue 07 PM	Wed 04 AM	35 hrs	Mon 08 AM	Mon 05 PM	93
NC	Carteret	B/Fast/High SP/County	Tue 07 PM	Wed 04 AM	34 hrs	Mon 09 AM	Mon 06 PM	93
NC	Carteret	B/Imm/Low SP/County	Tue 07 PM	Wed 04 AM	30 hrs	Mon 01 PM	Mon 10 PM	93



Calculating Evacuation Start Time

FEMA

HAZARDS

Storm Forecast

Arrival Time of Tropical-Storm Winds

–

PLANNING SCENARIOS

HES Data
(Hurricane Evacuation Study)
Pre-Determined Evacuation Zones and Scenarios

Clearance Time Scenario

=

EVACUATION

Evacuation Start Time

Calculating Evacuation Start Time 2

FEMA

HAZARDS

Storm Forecast

Arrival Time of Tropical-Storm Winds

47 Hours

–

PLANNING SCENARIOS

HES Data

(Hurricane Evacuation Study)

Pre-Determined Evacuation Zones and Scenarios

CATEGORY 3

Clearance Time Scenario

39 Hours

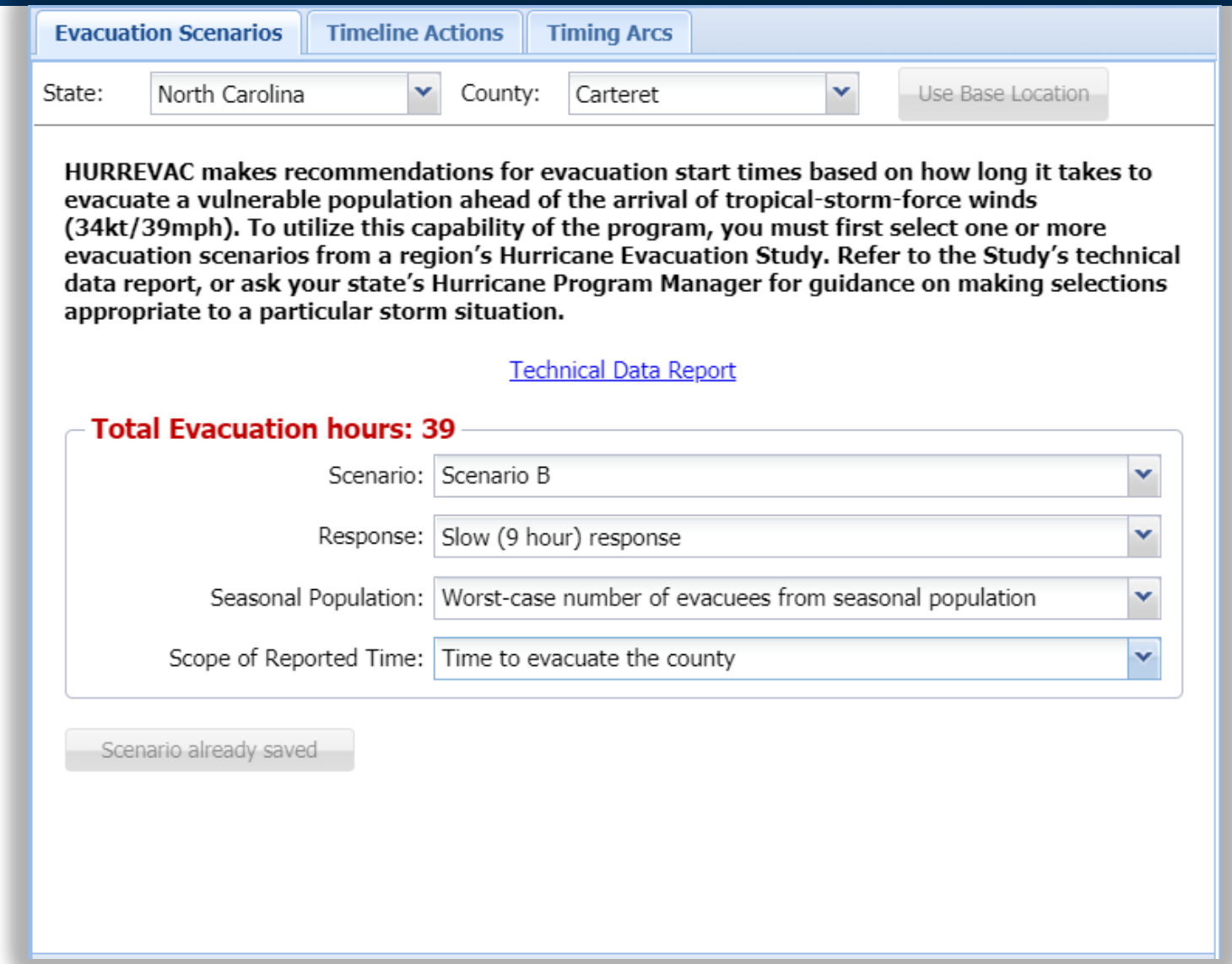
=

EVACUATION

Evacuation Start Time

8 Hours

Evacuation Scenarios



Evacuation Start Times (cont.)

Evacuation Timing
MALLORY #13

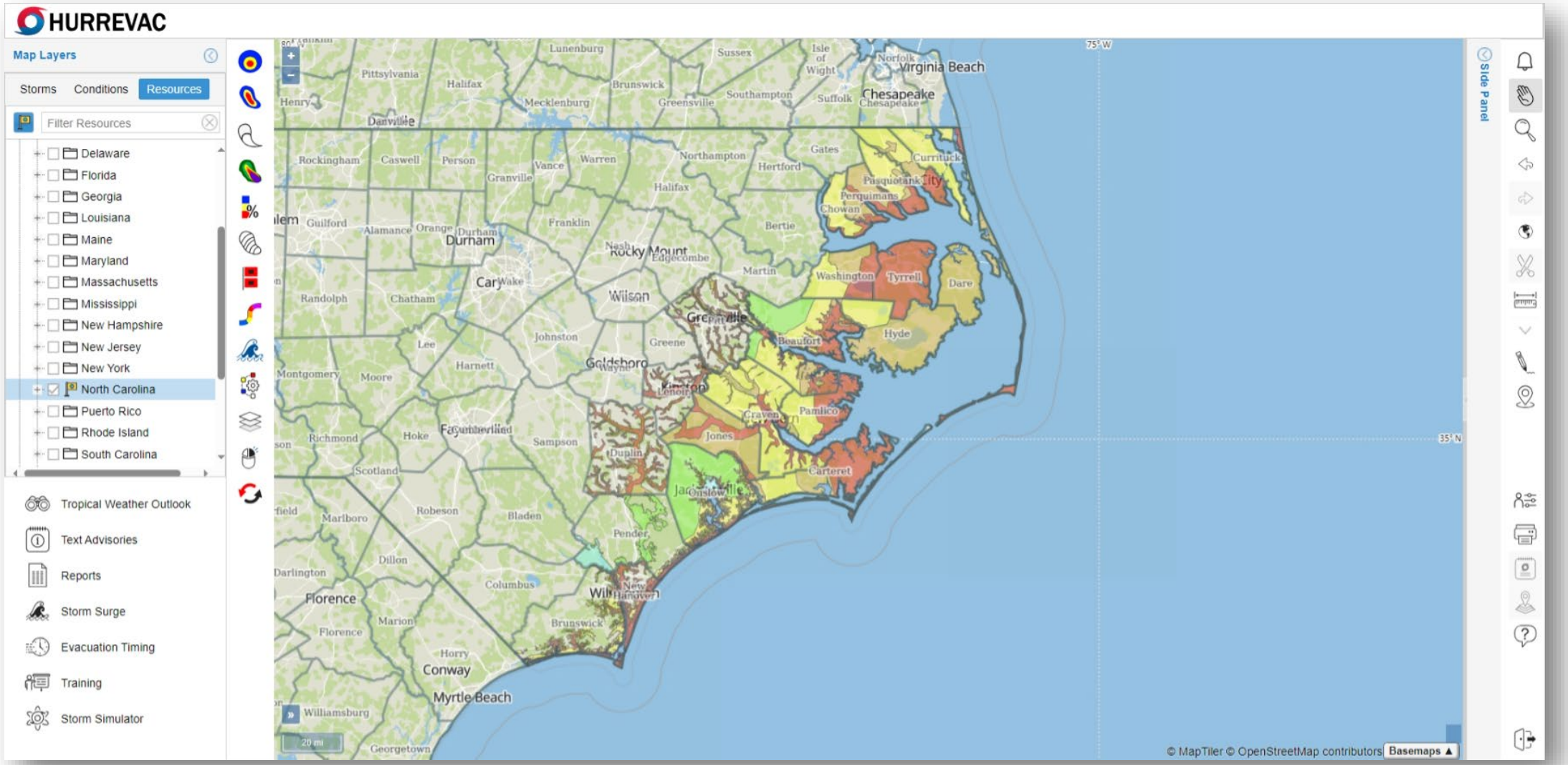
09/09/2019, 5:00 am

The purpose of the evacuations timing table is to show, for each location, when the onset of tropical-storm-force winds is expected and provide the earliest and latest times for making evacuation decisions based on the range of evacuation scenarios and settings that the user has selected.

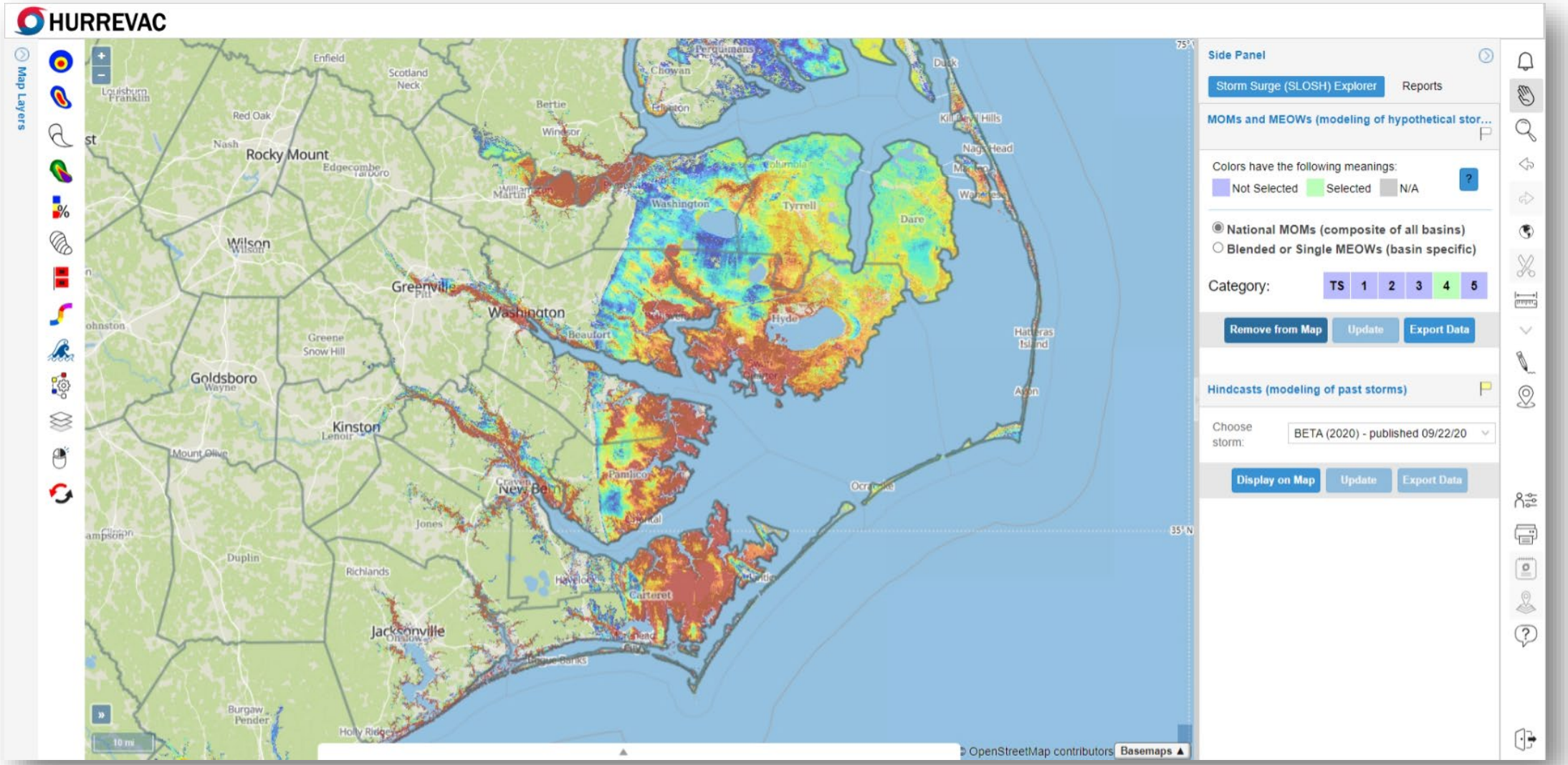
This report uses your saved Evacuation Scenarios and Timeline actions.

State	County	Scenario	Earliest-Reasonable TS Onset Time	Most-Likely TS Onset Time	Clearance Time	Earliest Evac Start Time	Latest Evac Start Time	TS WSP (%)
NC	Carteret	B/Slow/Worst/County	Tue 07 PM	Wed 04 AM	39 hrs	Mon 04 AM	Mon 01 PM	93
NC	Carteret	B/Mod/Med SP/County	Tue 07 PM	Wed 04 AM	35 hrs	Mon 08 AM	Mon 05 PM	93
NC	Carteret	B/Fast/High SP/County	Tue 07 PM	Wed 04 AM	34 hrs	Mon 09 AM	Mon 06 PM	93
NC	Carteret	B/Imm/Low SP/County	Tue 07 PM	Wed 04 AM	30 hrs	Mon 01 PM	Mon 10 PM	93

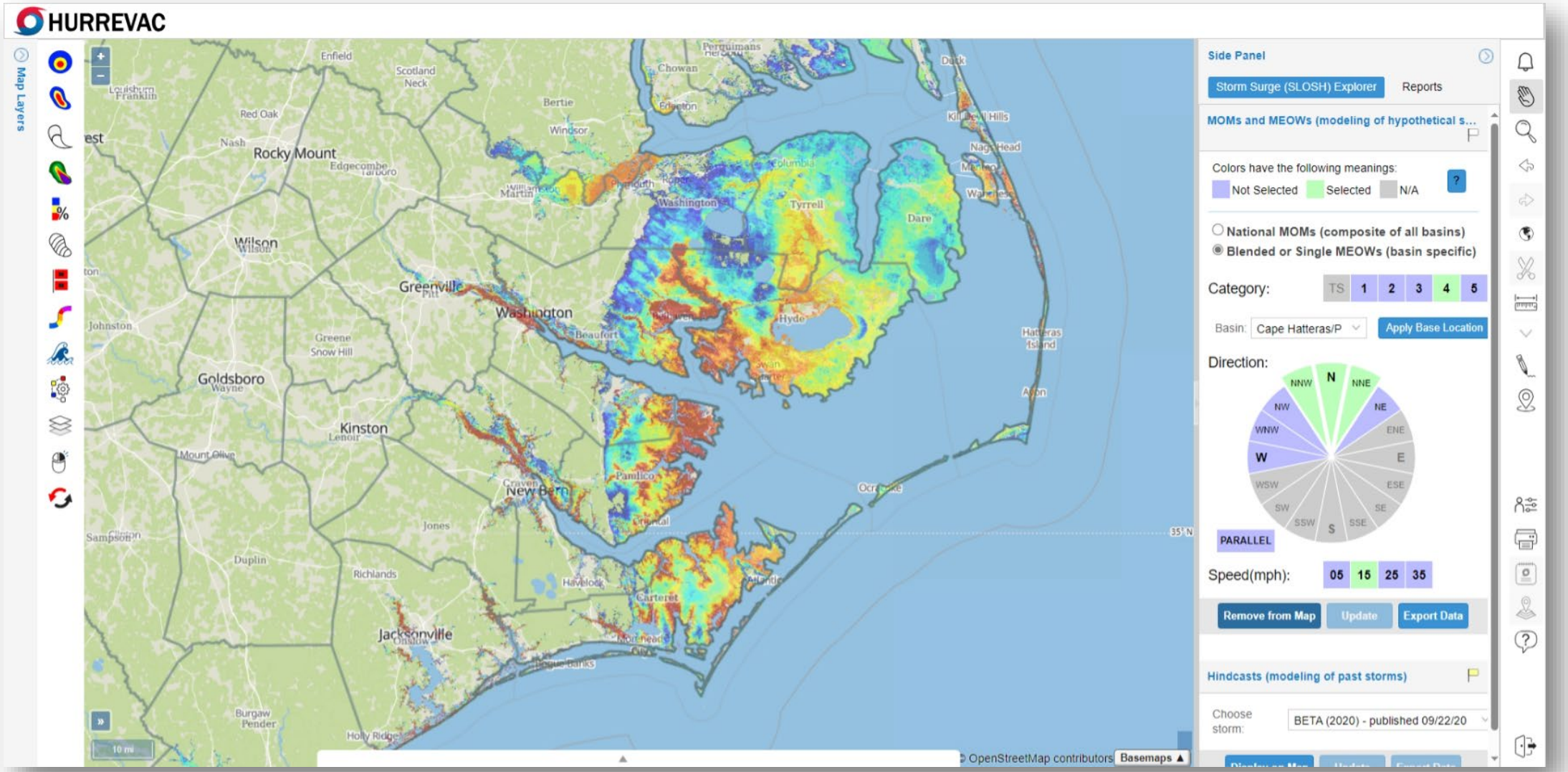
Evacuation Zones



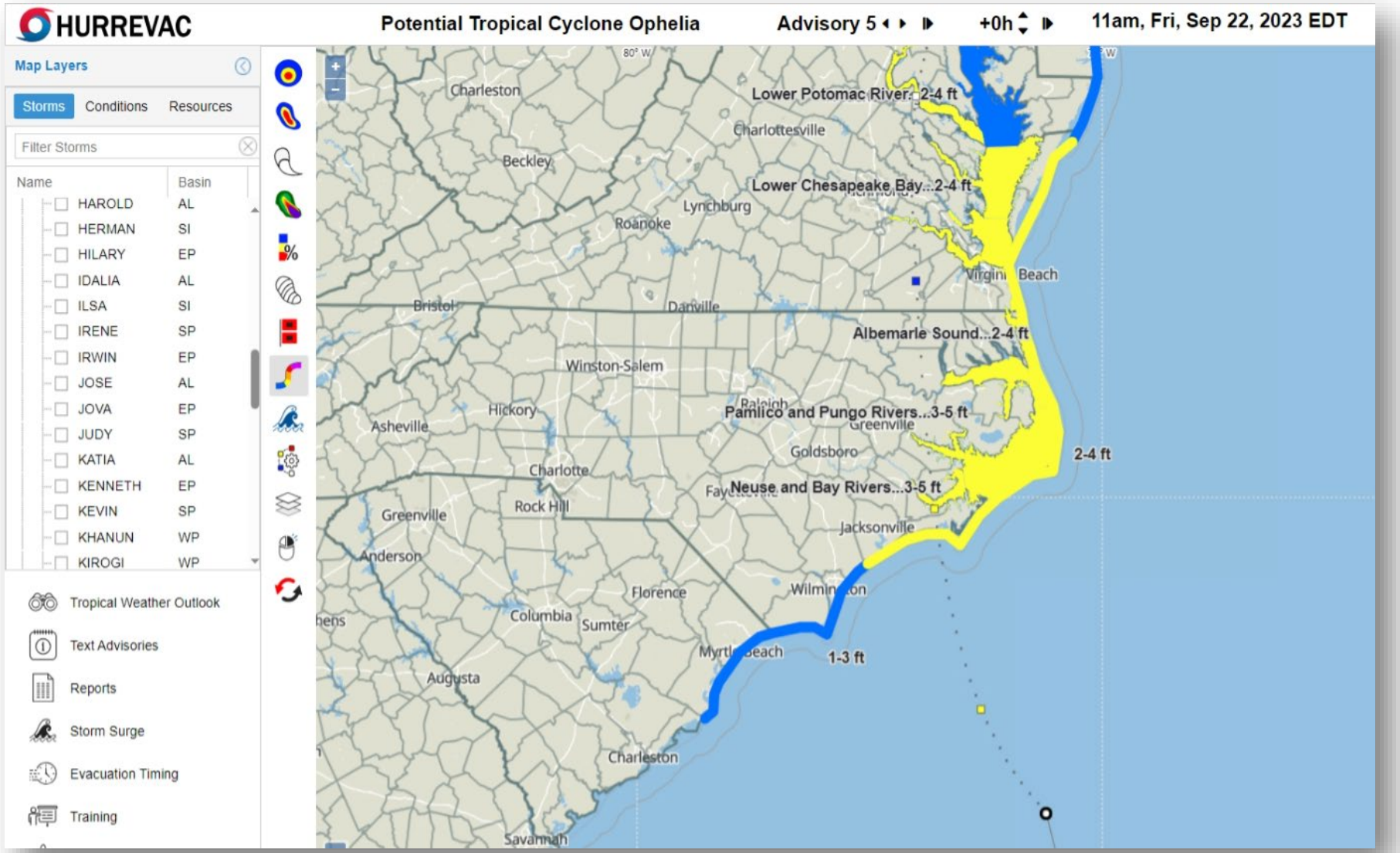
Surge Threat – SLOSH MOMs



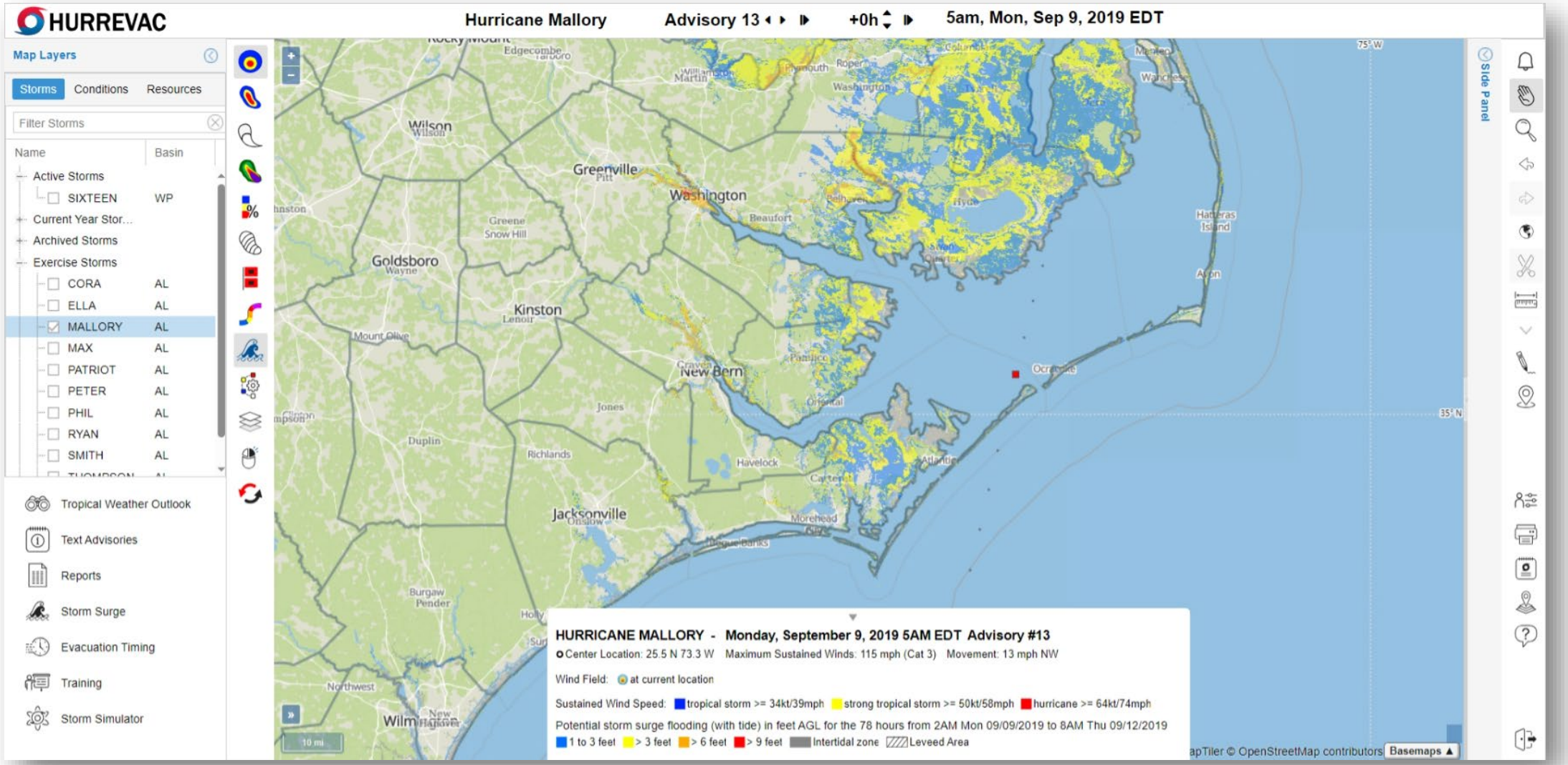
Surge Threat – SLOSH MEOWs



Surge Threat – Peak Storm Surge



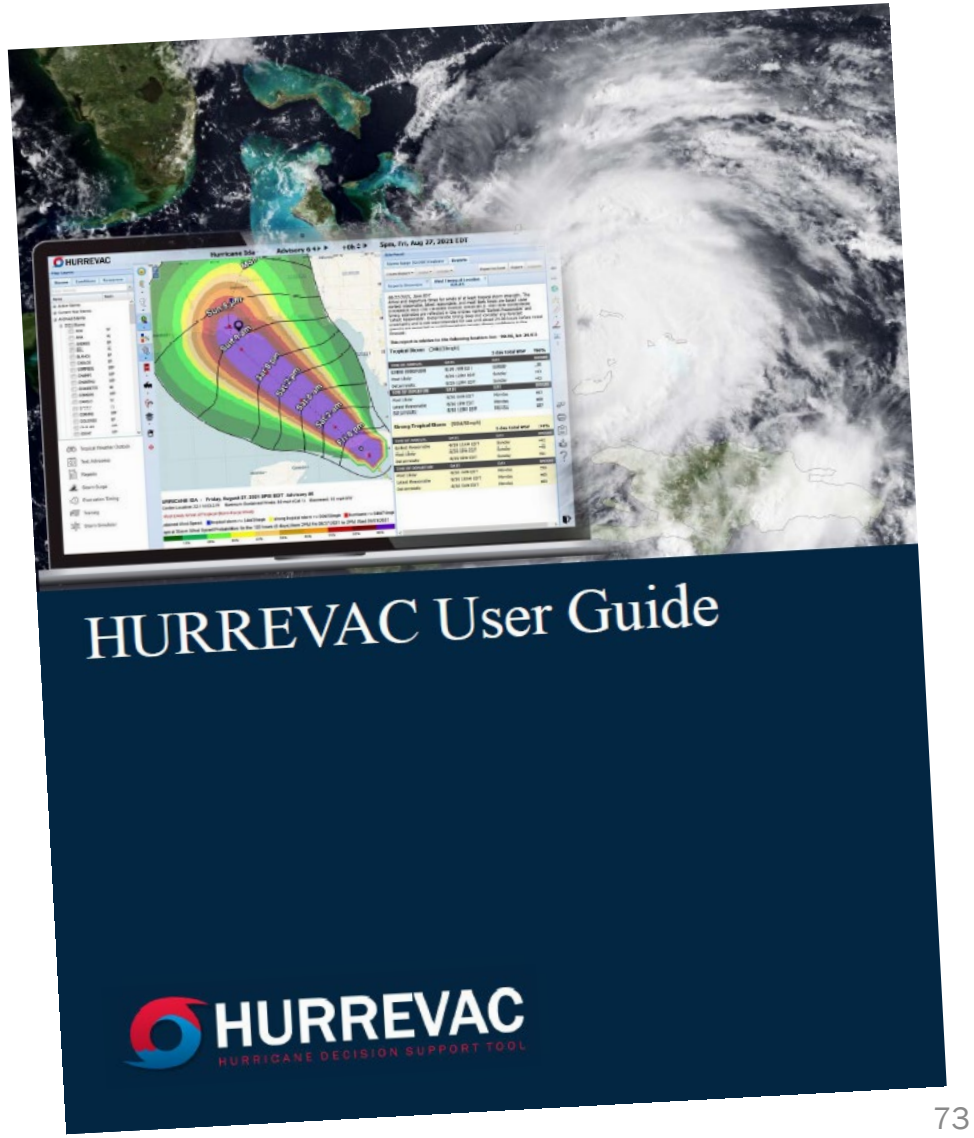
Surge Threat – Potential Inundation



HURREVAC Account Registration

Registration

- https://register.hurrevac.com/



Frequently Asked Questions 10

FAQs

- Confidence? Contingencies?
- What is the forecast/evacuation timing?
- Can we get a briefing?

- **Hurricane Liaison Team**

Background

HLT Background

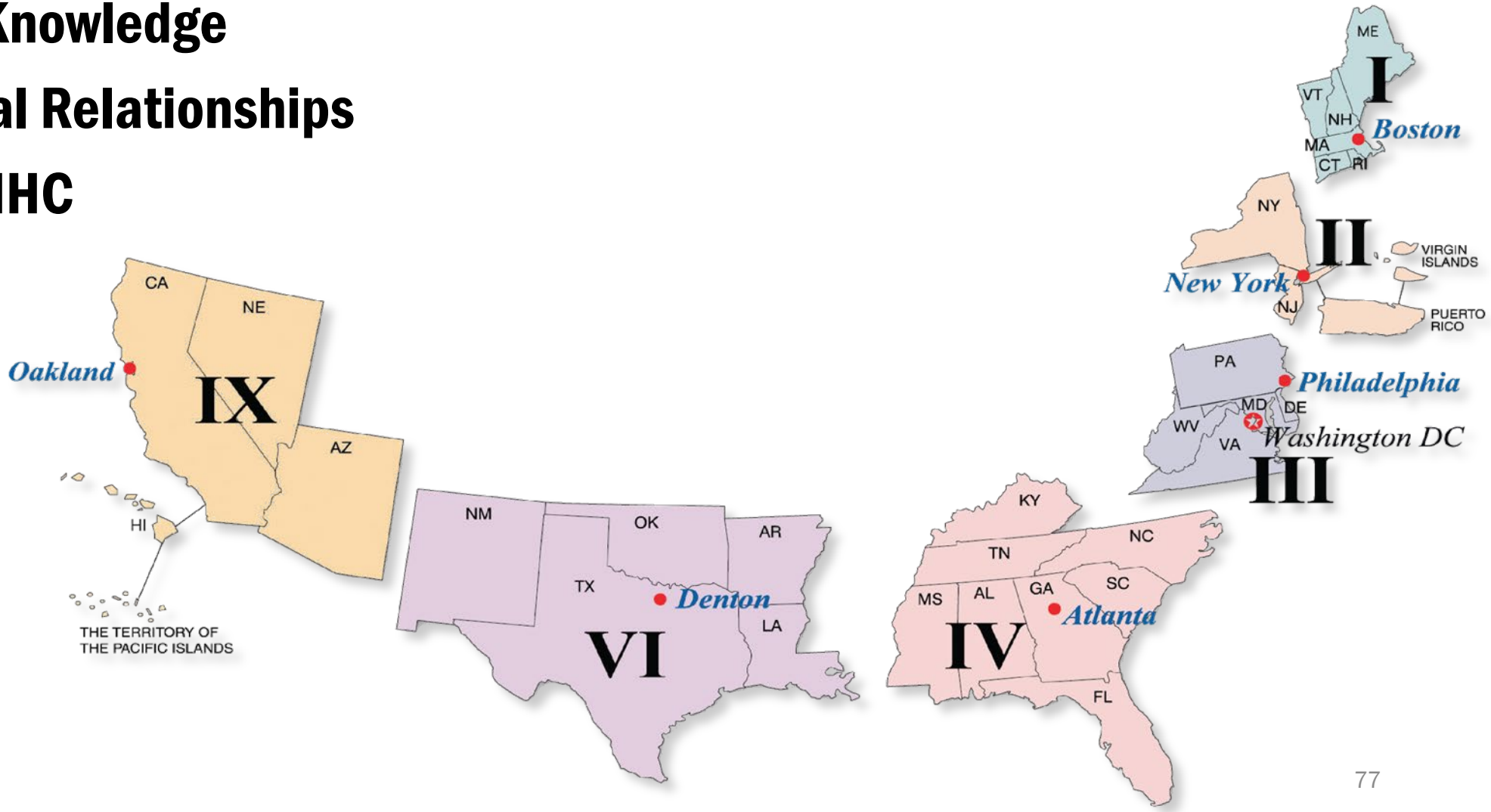
- **Initial idea arose in the early 1990s**
- **Proven during response to the 1995 Hurricane Season**
  - Erin and Opal
- **Formalized in 1996**
  - Request from Governor of Florida to FEMA and NHC Director
- **Full-time positions at NHC**

Mission

"The Hurricane Liaison Team's mission is to **improve our Nation's capability to respond to hurricanes through the rapid exchange of critical information** between the National Hurricane Center and Federal, State, Local, Tribal and Territorial Emergency Managers."

Regional Program Managers

- **Technical Knowledge**
- **State/Local Relationships**
- **Deploy to NHC**



Responsibilities

HLT Responsibilities

- **Real-time interpretation, assessment, and guidance**
  - Apply NHC forecasts with Regional, State, and local response evacuation plans
- **Forum for EMs to ask questions**
  - Reinforce decisions
  - Assist with the use of NHC forecasts and predictive modeling
- **Provide NHC visibility on EM protective actions**
  - Improve messaging

Unit Review

- Identify the components of the Hurricane Evacuation Study (HES).
- Explain clearance times and their use.
- Identify the capabilities of HURREVAC.
- Apply NHP products and services for planning and operational purposes.

Questions/Comments

Course Review 1

Course Review

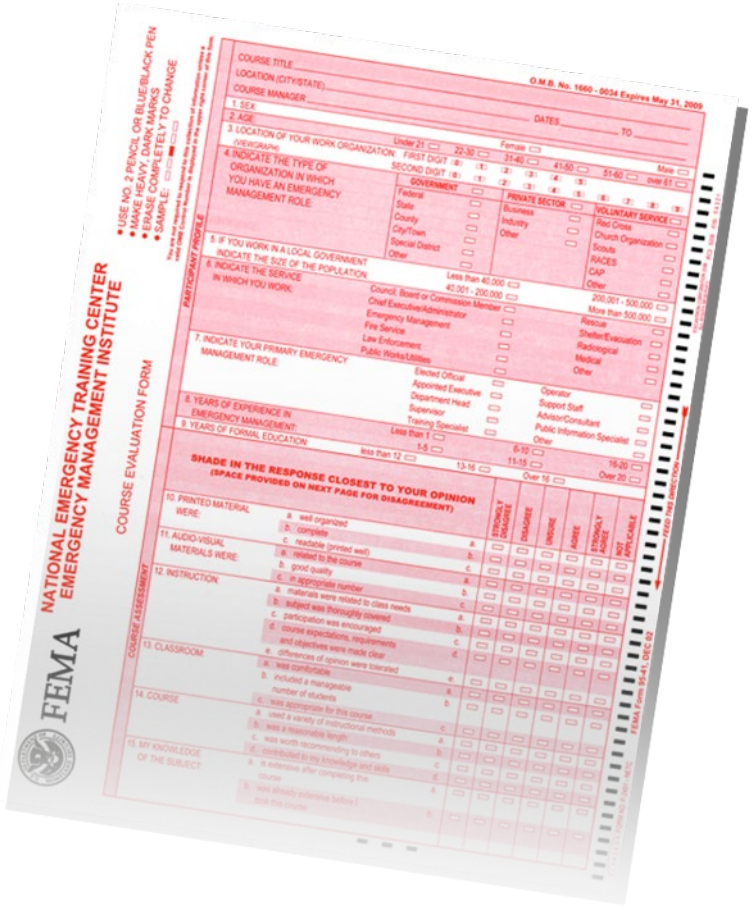
- **Unit 1: Explain the hurricane life cycle, climatology, and associated hazards to coastal communities.**

- **Unit 2: Describe when NHC products are available for tropical cyclone events and how to use them to determine threats from an approaching storm.**

Course Review

- **Unit 3: Explain the uncertainties of NHC forecasts that must be considered in emergency management decision making.**
  - **Describe the storm surge threat and how to assess potential impacts.**
- **Unit 4: Explain the components of Hurricane Evacuation Studies (HES) and how they can inform planning for hurricanes.**
  - **Identify the resources available for evacuation planning and response and how to use them.**

NDEMU Evaluation Form



- Please complete
- Rate topics and instructors from Scale of 1 (lowest) - 5 (highest)
- Write in comments to improve the training!