

2026 HURREVAC Training Webinar Series

Day 4 – Evacuation Timing Features

June 18, 2026



FEMA



NATIONAL HURRICANE PROGRAM



HURREVAC

HURRICANE DECISION SUPPORT TOOL



THIS WEEK'S AGENDA

MON. JUNE 15: Intro to HURREVAC

TUES. JUNE 16: Wind Forecast Features

WED. JUNE 17: Storm Surge and Flooding Hazards

THURS. JUNE 18: Evacuation Timing Features

Recordings from all previous sessions available on YouTube

Today's Presenters



Frannie Bui, PE, PMP

National Hurricane Program Manager
U.S. Army Corps of Engineers, Baltimore District

Karen Townsend

President, Sea Island Software



NATIONAL HURRICANE PROGRAM

OVERVIEW

**HES & HURREVAC
EVACUATION TIMING
FEATURES**



National Hurricane Program

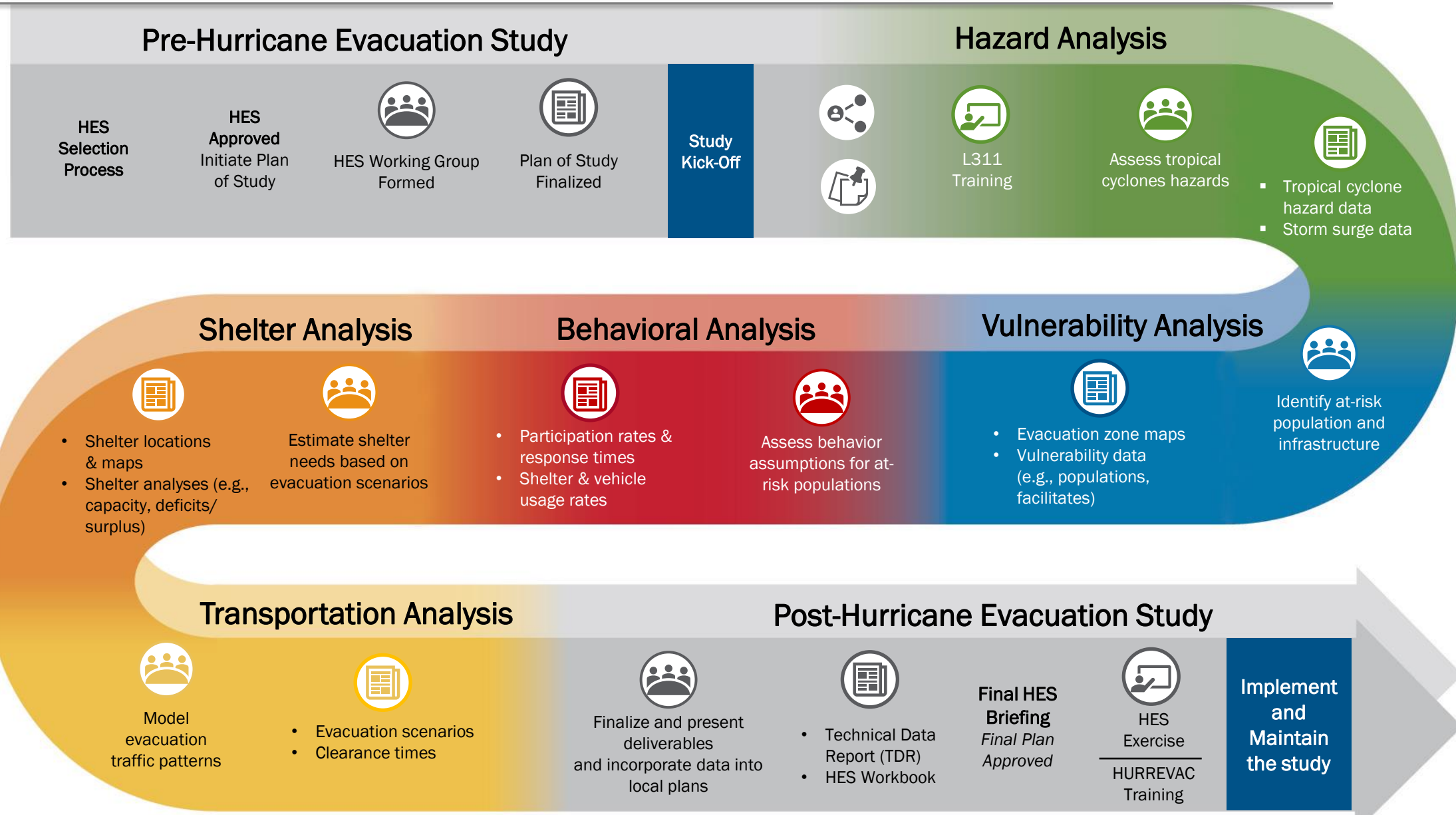


products

services



Hurricane Evacuation Study Process



Deliverables

- HES Working Group Meeting
- Exec Leadership Meeting
- PUSH Comms
- Training

Pre-Hurricane Evacuation Study

HES Selection Process

HES Approved
Initiate Plan of Study

HES Working Group Formed

Plan of Study Finalized

Study Kick-Off

Hazard Analysis

L311 Training

Assess tropical cyclones hazards

- Tropical cyclone hazard data
- Storm surge data

Shelter Analysis

- Shelter locations & maps
- Shelter analyses (e.g., capacity, deficits/surplus)

Estimate shelter needs based on evacuation scenarios

Behavioral Analysis

- Participation rates & response times
- Shelter & vehicle usage rates

Assess behavior assumptions for at-risk populations

Vulnerability Analysis

- Evacuation zone maps
- Vulnerability data (e.g., populations, facilitates)

Identify at-risk population and infrastructure

Transportation Analysis

Model evacuation traffic patterns

- Evacuation scenarios
- Clearance times

Post-Hurricane Evacuation Study

Finalize and present deliverables and incorporate data into local plans

- Technical Data Report (TDR)
- HES Workbook

Final HES Briefing
Final Plan Approved

HES Exercise
HURREVAC Training

Implement and Maintain the study

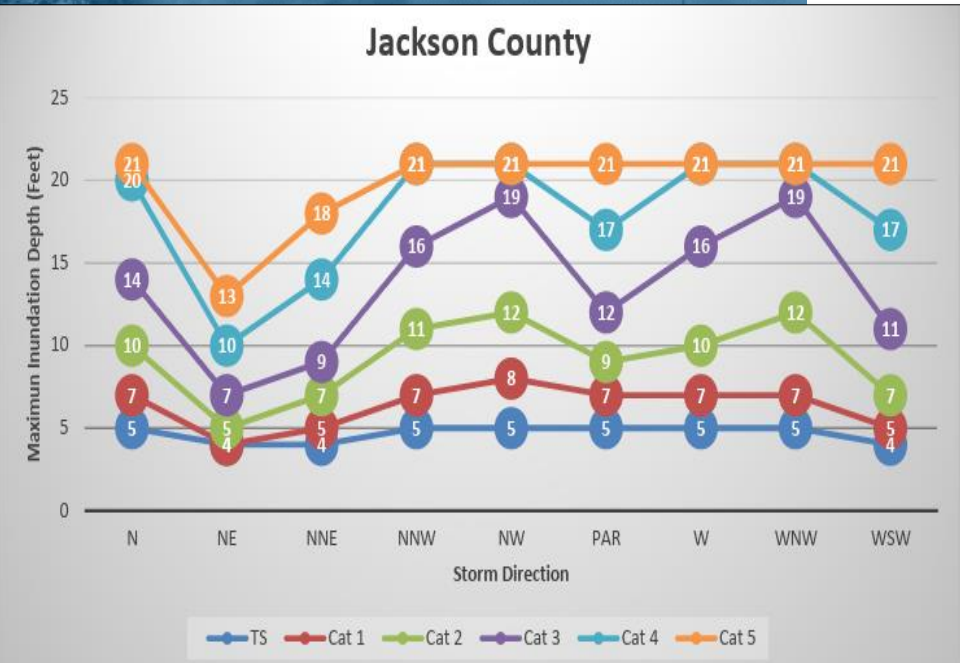


Process and Outcomes

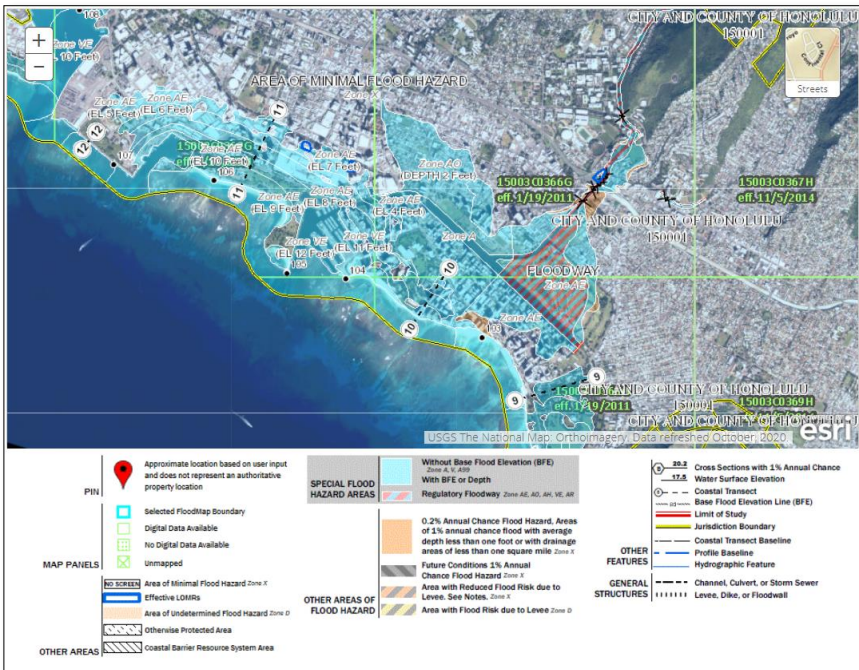


HAZARDS ANALYSIS

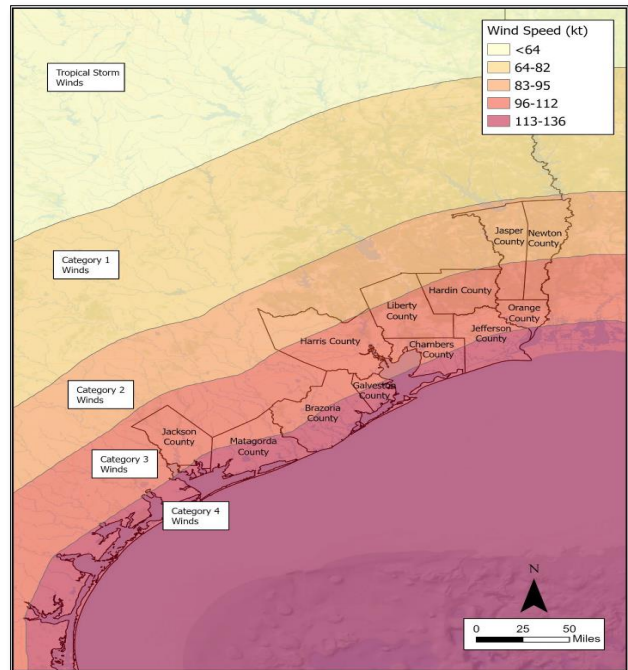
- Refined understanding of hurricane risks through:
 - Grouping and mapping MOMs and MEOWs
 - Overlaying storm surge and FEMA maps
 - Mapping maximum envelopes of wind



MOM and MEOW Groupings



FEMA Flood Mapping



Maximum Envelopes of Wind

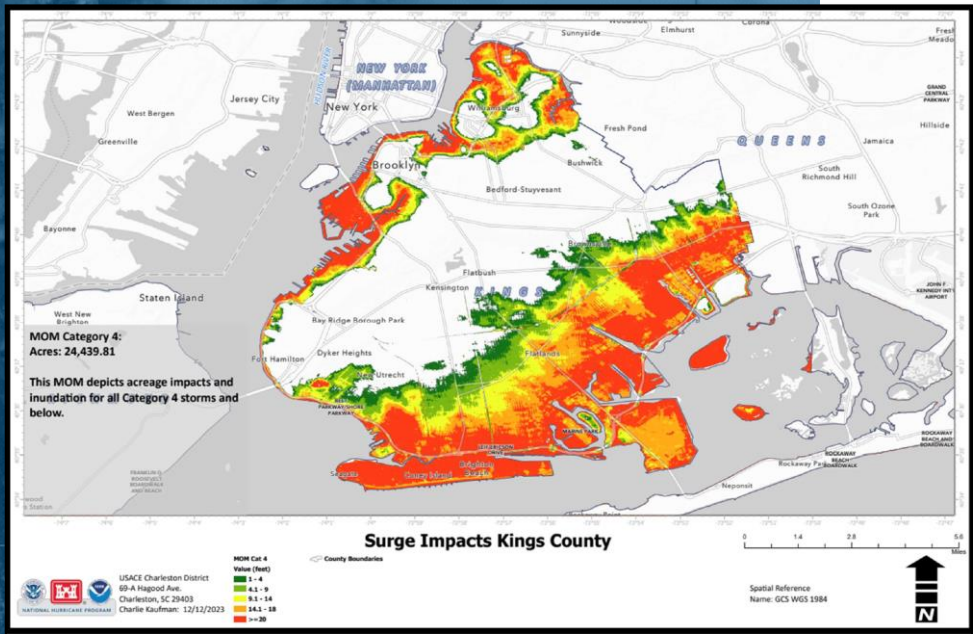


Process and Outcomes

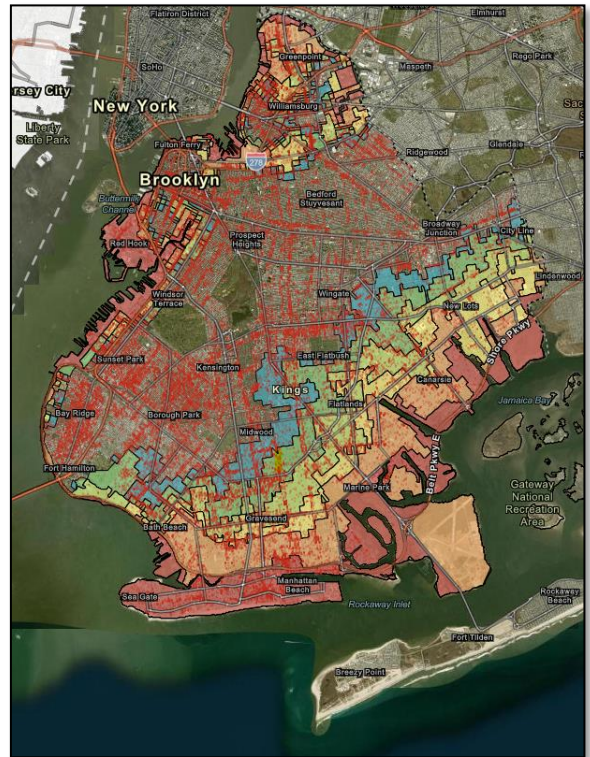


VULNERABILITY ANALYSIS

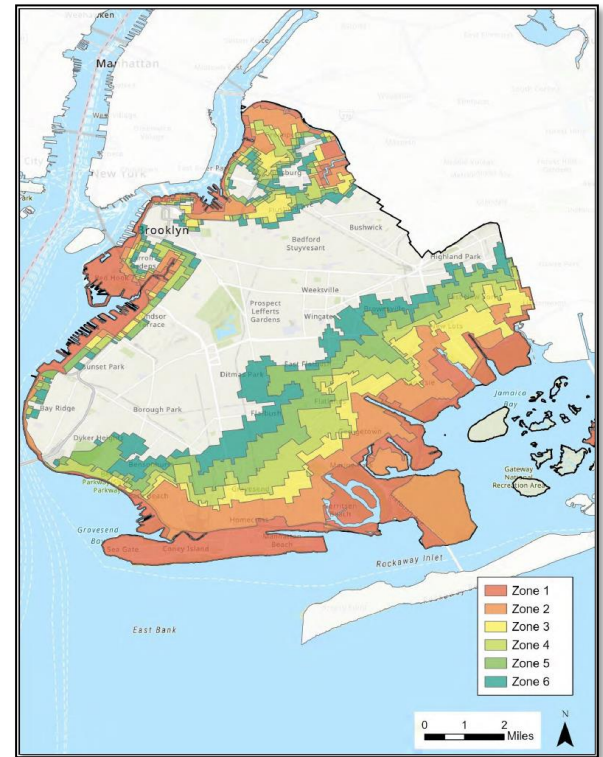
- Identify vulnerable population and critical infrastructure
- Develop (or refine) Evacuation Zones by combining hazard maps, vulnerability data, transportation network, and state & local input.



Hazard Maps



State + Local Input



Evacuation Zones



Process and Outcomes



BEHAVIORAL ANALYSIS

- Conduct surveys and leverage data to develop an understanding of how populations respond to threats
 - Evacuation participation rates
 - Response time
 - Destination weights
 - Public shelter usage rates
 - Vehicle usage

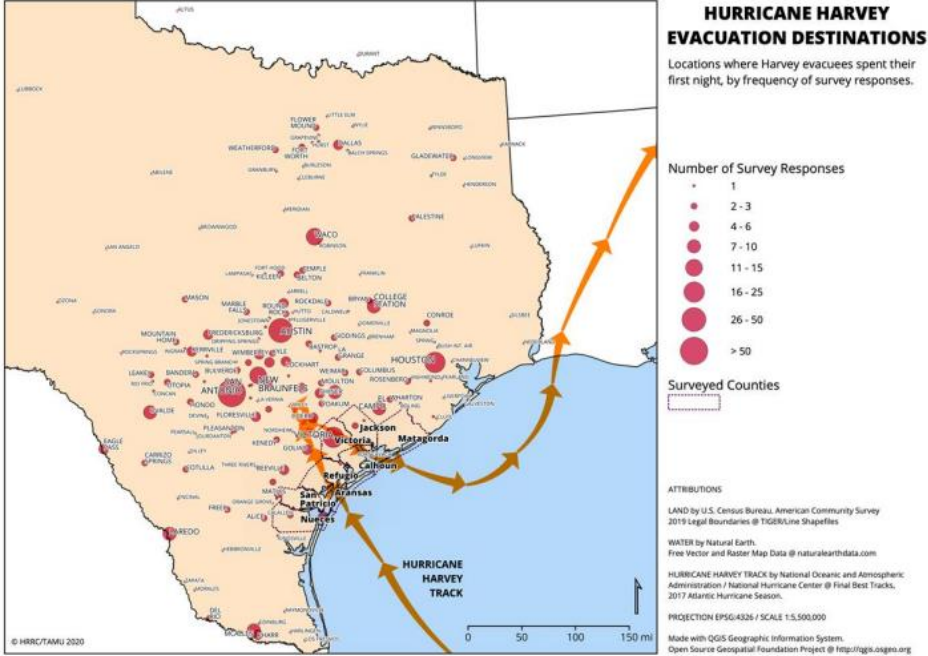
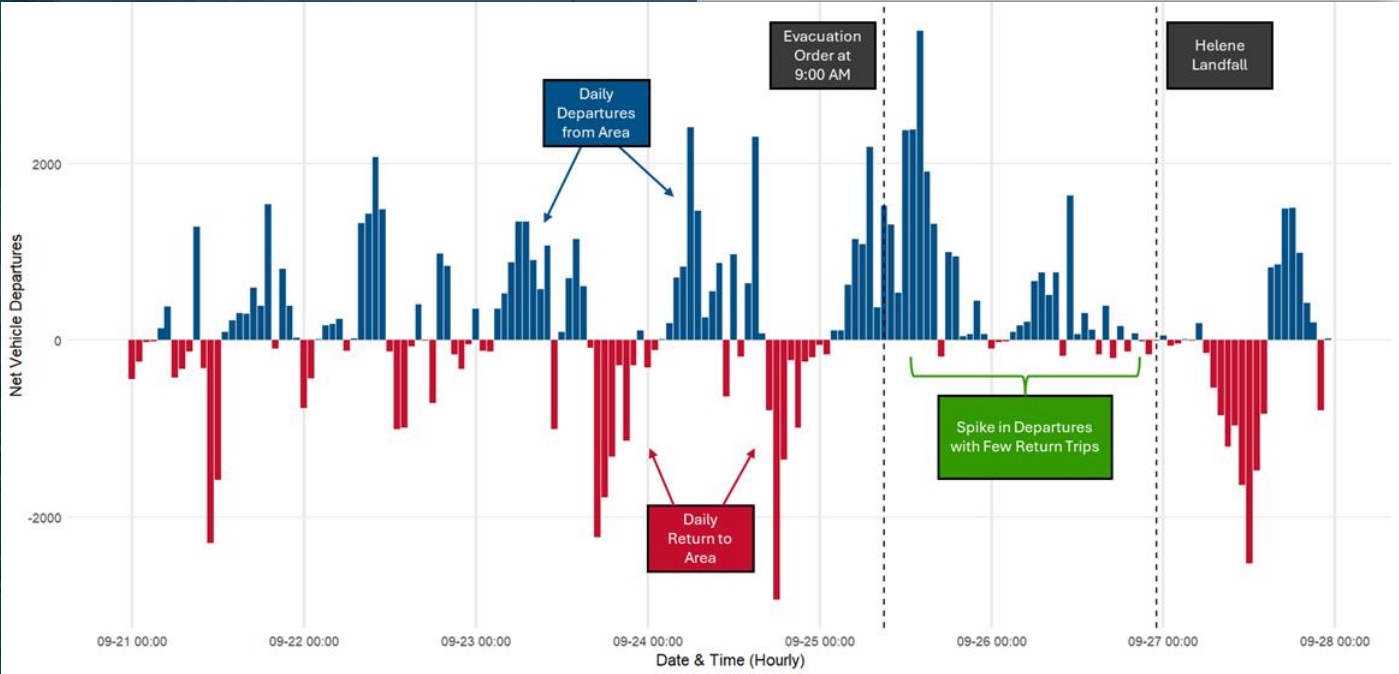


Figure 6. Hurricane Harvey evacuation destinations. Source: Bierling et al. (2020).



SHELTER ANALYSIS

Process and Outcomes



Conduct a detailed geospatial analysis and use shelter rates (from the behavioral analysis) to:

- Identify shelter locations
- Identify shelter vulnerability
- Perform a shelter demand vs. capacity analysis

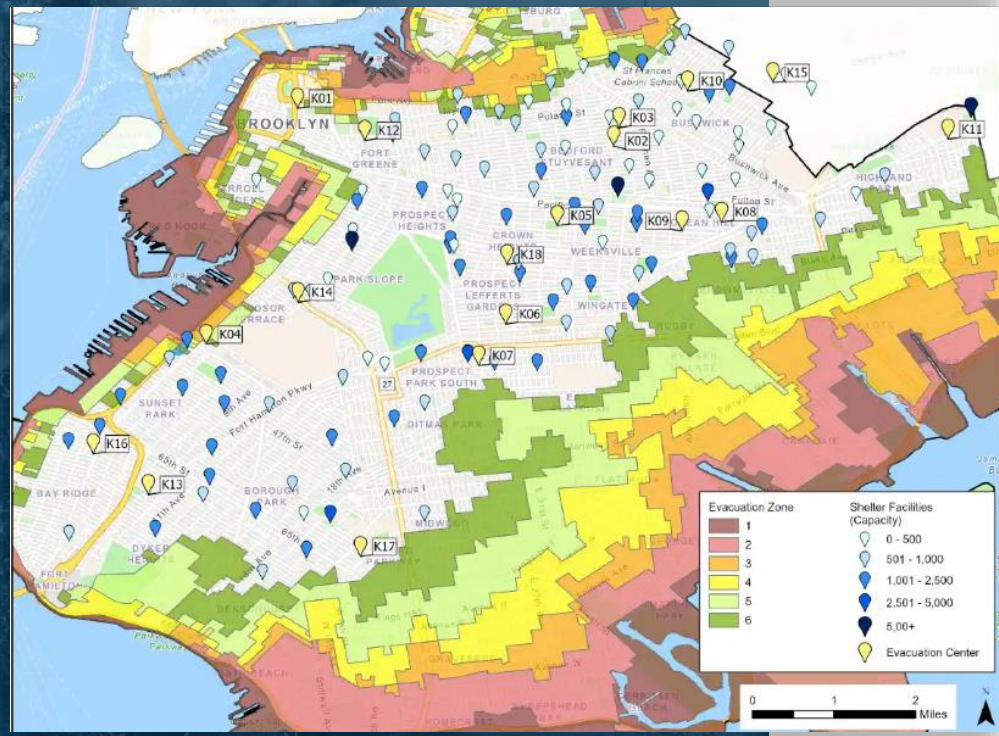
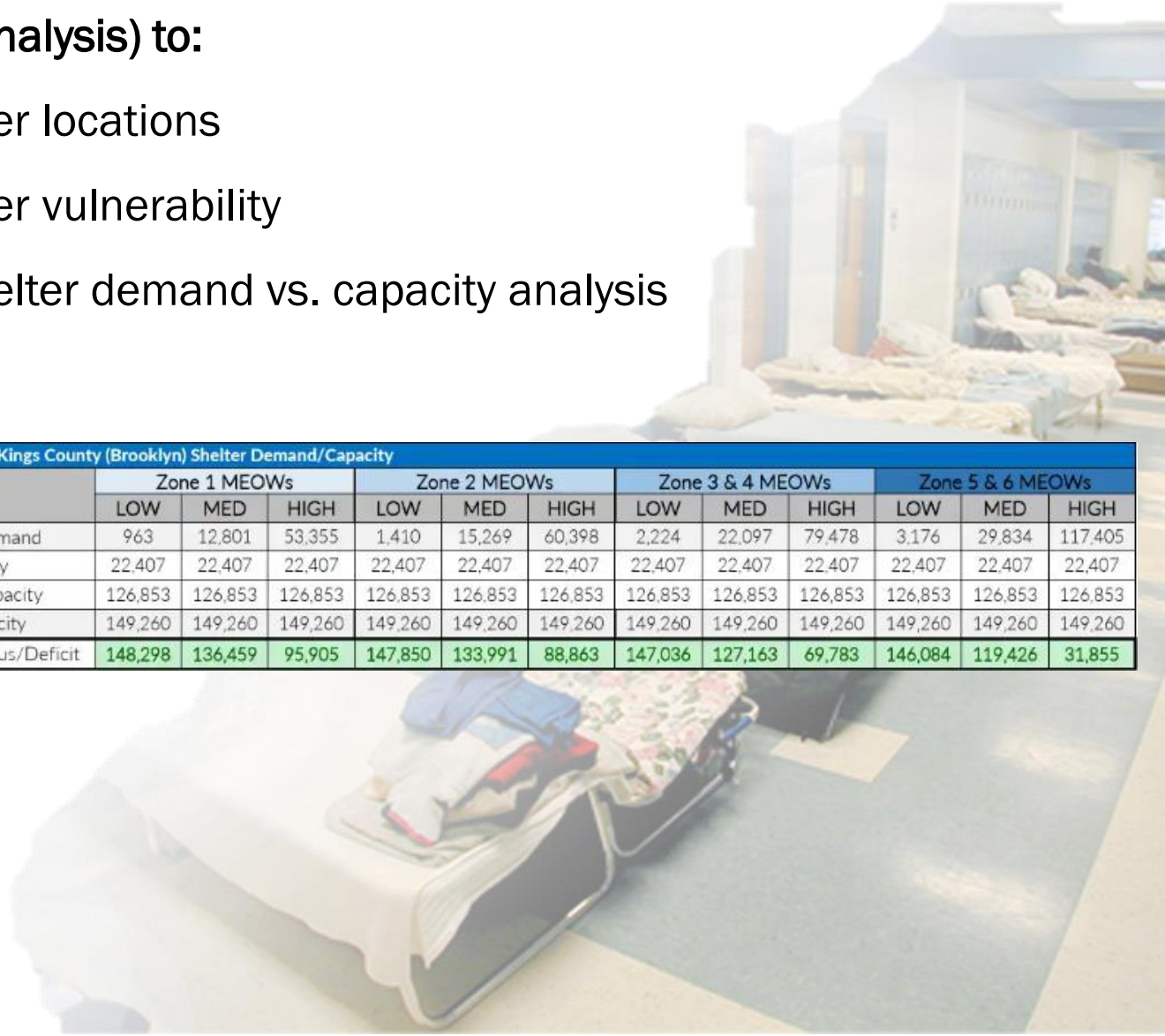


Table 3.11: Kings County (Brooklyn) Shelter Demand/Capacity

Metric	Zone 1 MEOWs			Zone 2 MEOWs			Zone 3 & 4 MEOWs			Zone 5 & 6 MEOWs		
	LOW	MED	HIGH	LOW	MED	HIGH	LOW	MED	HIGH	LOW	MED	HIGH
Shelter Demand	963	12,801	53,355	1,410	15,269	60,398	2,224	22,097	79,478	3,176	29,834	117,405
EC Capacity	22,407	22,407	22,407	22,407	22,407	22,407	22,407	22,407	22,407	22,407	22,407	22,407
Shelter Capacity	126,853	126,853	126,853	126,853	126,853	126,853	126,853	126,853	126,853	126,853	126,853	126,853
Total Capacity	149,260	149,260	149,260	149,260	149,260	149,260	149,260	149,260	149,260	149,260	149,260	149,260
Total Surplus/Deficit	148,298	136,459	95,905	147,850	133,991	88,863	147,036	127,163	69,783	146,084	119,426	31,855





TRANSPORTATION ANALYSIS

Process and Outcomes



- **Develop Evacuation Scenarios** through close coordination with local & state emergency managers
- **Transportation modeling** to calculate **Clearance Times** using the Real Time Evacuation Planning Model (RtePM)
- **HURREVAC Integration**

Scenario	Participation Rate			Evacuation Zone				One Day Response Curve			Virginia & Maryland		Phased Approach	
	Low	Med	High	A	B	C	D	Slow	Med*	Fast	With	W/O**	With	W/O**
ES-32		Yellow		Blue	Blue				Green					
ES-33			Yellow	Blue	Blue				Green					
ES-34	Yellow			Blue	Blue				Green					
ES-35		Yellow		Blue	Blue				Green					
ES-36			Yellow	Blue	Blue				Green					
ES-37	Yellow			Blue					Green		Red			
ES-38		Yellow		Blue					Green		Red			
ES-39			Yellow	Blue					Green		Red			
ES-40	Yellow			Blue	Blue				Green		Red			
ES-41		Yellow		Blue					Green		Red			
ES-42			Yellow	Blue					Green		Red			



Evacuation Timing ? X

Evacuation Scenarios | Timeline Actions | Timing Arcs

State: Delaware County: Sussex Use Base Location

HURREVAC makes recommendations for evacuation start times based on how long it takes to evacuate a vulnerable population ahead of the arrival of tropical-storm-force winds (34kt/39mph). To utilize this capability of the program, you must first select one or more evacuation scenarios from a region's Hurricane Evacuation Study. Refer to the Study's technical data report, or ask your state's Hurricane Program Manager for guidance on making selections appropriate to a particular storm situation.

[Delaware HES Transportation Analysis Report](#) | [Delaware HES Vulnerability Analysis Report](#)

Total Evacuation hours: Range of 12 hours - 74 hours

Evacuation Zone: ▼

Evacuation Participation Rate: ▼

Response: ▼

External Regions Evacuating: ▼

Evacuation Phasing: ▼

Add Scenario

Saved Scenarios: Delete Selection Create Report

<input type="checkbox"/> Location	Scenario	Hours

Evacuation Timing Features in HURREVAC



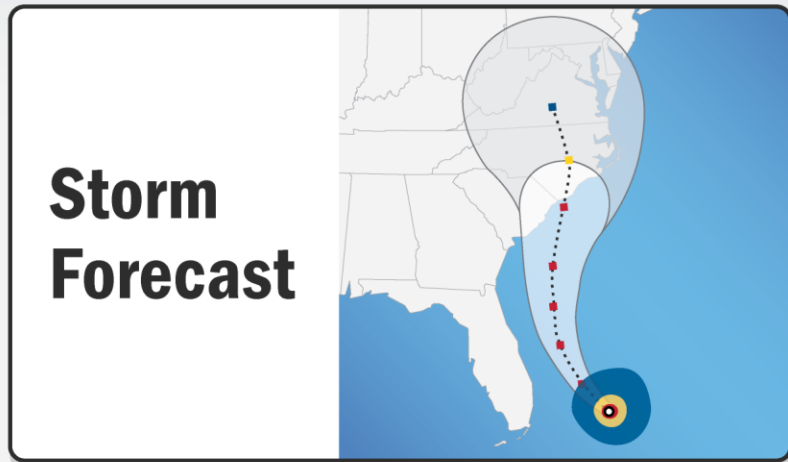
EVACUATION
ROUTE



Calculating Evacuation Start Time



HAZARDS



**Arrival Time of
Tropical-Storm-Force Winds**



PLANNING SCENARIOS

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



**Clearance Time
Scenario**



EVACUATION

**Evacuation
Start Time**



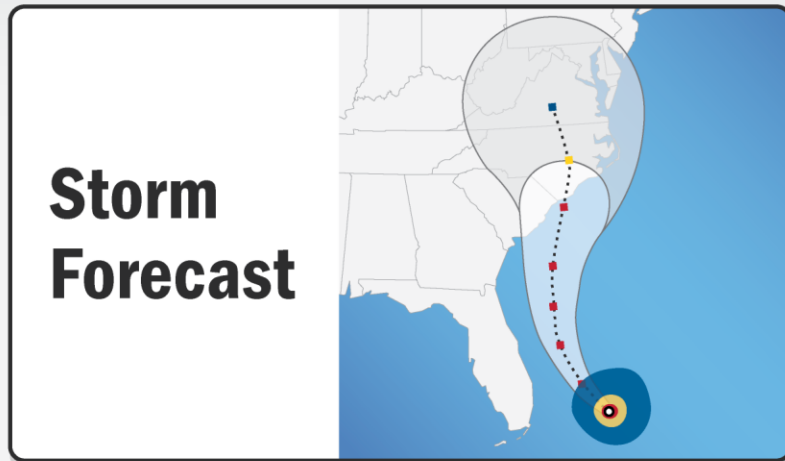
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Calculating Evacuation Start Time



HAZARDS



Arrival Time of
Tropical-Storm-Force Winds

8pm Saturday

PLANNING SCENARIOS

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

CATEGORY 3

Clearance Time
Scenario

36 Hours

EVACUATION

Evacuation
Start Time

8am Friday

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HURREVAC Demo





Goals for Today

1. Access HES documents
2. Map evacuation zones and compare to storm surge layers
3. Combine clearance times with forecast data to calculate evacuation start time
4. Input custom timeline actions
5. Compare evacuation timing report with timing arcs method

When are advisory products usually available in HURREVAC?



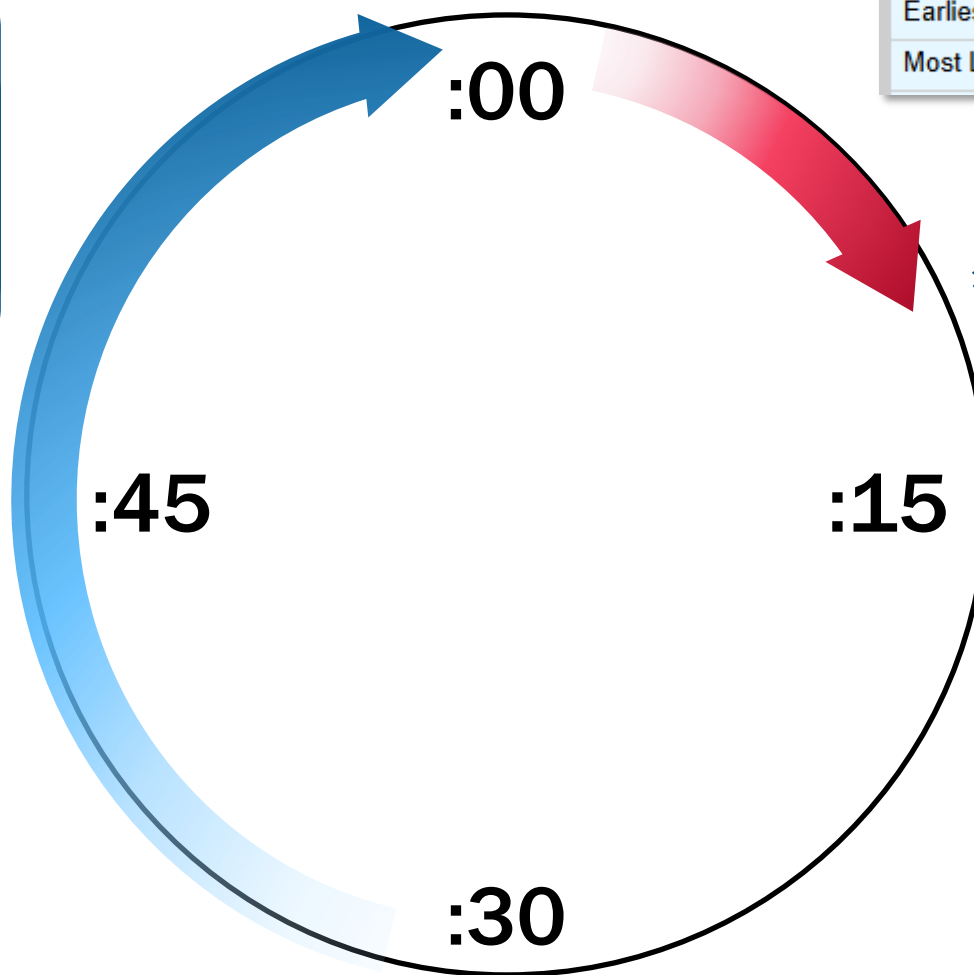
FIRST



- Track
- Text advisories
- Deterministic reports

- Times vary, especially when multiple storms are active
- Forecast layers not updated for intermediate advisories

ADVISORY HOUR



TIME OF ARRIVAL	DATE
Earliest Reasonable	TBD
Most Likely	TBD

Map Layer Not Available

No Potential Storm Surge Flooding layer exists for Advisory. [Learn More](#)

Turn Off Layer

NEXT



- Probabilistic report data (% , TOA, TOD)
- Evac. timing report

LAST

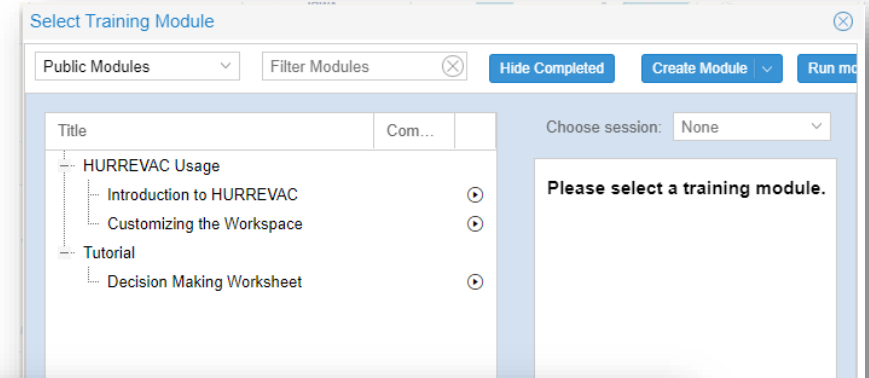
About 60-90 min. after advisory hour

Additional Resources: Self-Paced HURREVAC Training





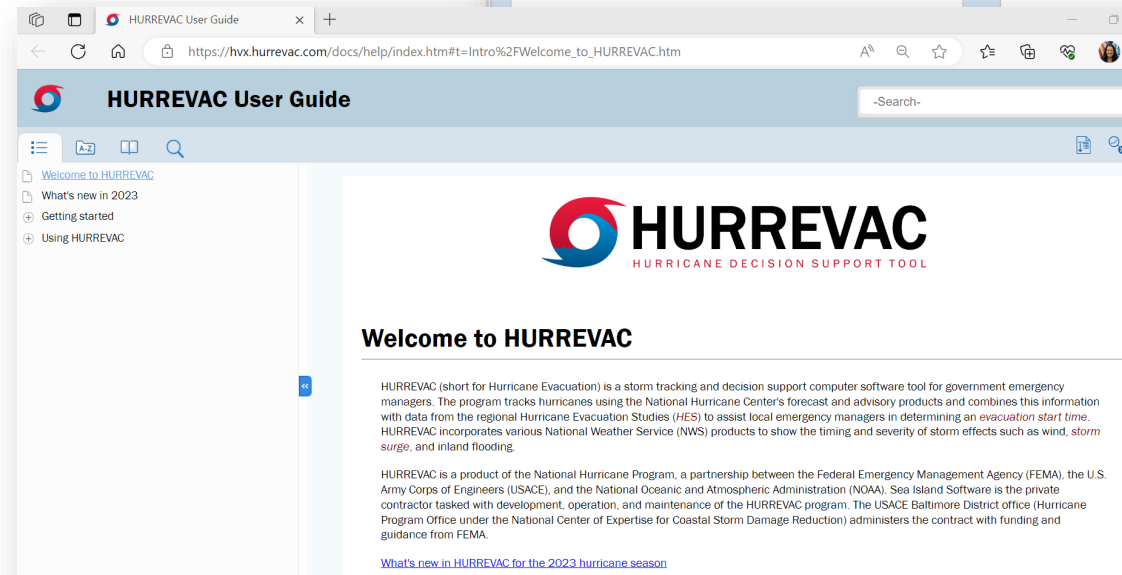
On hurrevac.com

- Webinar recordings & slides
- Announcements
- Printable reference guides



Inside the program

- User Guide 
- Training Modules 



[HURREVAC – YouTube channel](#)

Thank you!

HURREVAC Support Team
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