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Proposed I-73 and SELL Corridors Hurricane Evacuation Analysis

Study Results

Myrtle Beach, SC
August 1, 2012

Plan Design Enable

Presentation Components

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- Study Background
- Study Overview
- Study Findings

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Part I

Study Background

Study Background

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- Previous study efforts
 - SC Evacuation Study—Transportation Analysis (1986)
 - Hurricane Hugo Post Storm Evacuation Analysis (1989)
 - Hurricanes Bertha/Fran Post Storm Study (1996)
 - Hurricane Floyd Post Storm Evacuation Analysis (1999)
 - NC Hurricane Evacuation Restudy—Transportation Analysis (1999)
 - SC Hurricane Evacuation Restudy—Transportation Analysis (2000)
 - US 17/US 521 Contraflow Analysis—Georgetown County (2001)
 - SC 2000 Census Update of Abbreviated Traffic Model (2002)

Study Background

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- Previous study efforts (continued)
 - Brunswick County Progress Energy Nuclear Power Plant Evacuation Analysis (2002)
 - Horry County Southern Connector Evacuation Route Analysis (2003)
 - NCDOT Statewide Hurricane Evacuation Model (2005)
 - I-73 Hurricane Evacuation Alternative Alignments Analysis (2005)
 - SELL Hurricane Evacuation Analysis (2007)
 - Hurricane Evacuation Route Clearance Time Analysis for US 21, US 278, and SC 544 Contra-flow Operations (2007)
 - Northern Conglomerate Transportation Analysis—South Carolina Hurricane Evacuation Study Analysis (2012)

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Part II

Study Overview

Study Tasks

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- Analysis of the no build alternative for the current base year and future planning horizon (2030).
- Analysis of one assumed final/preferred alignment for I-73 and SELL individually and in concert with each other for future year scenario.
- Comparison of clearance times and bottlenecks for current base year and future year scenario with and without projects constructed.
- Incorporation of the latest contraflow plans developed by state and local EM and LE officials.

Study Tasks

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- Incorporation of county growth factors into demographic/dwelling unit data from latest transportation analysis to create future year analysis data set.
- Development of technical memorandum to summarize analysis findings and possible benefits to evacuation if projects are implemented.

Modeling Process – FEMA/USACE HES

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- Development of socioeconomic data by evacuation area for each analysis year;
- Development of behavioral assumptions by evacuation area;
- Generation of evacuating people and vehicles by evacuation area;
- Development of route utilization assumption by evacuation area; and
- Assignment of evacuating vehicles to the critical roadway segments and calculation of clearance times.

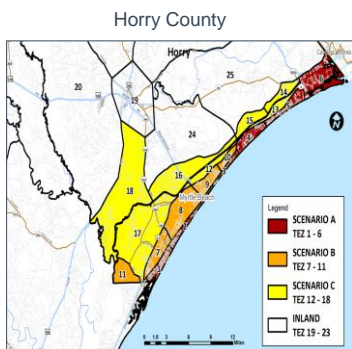
Model Inputs

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- Evacuation Zones
- Socioeconomic/Land Use Data
- Evacuation Behavioral Assumptions
- Roadway Characteristics

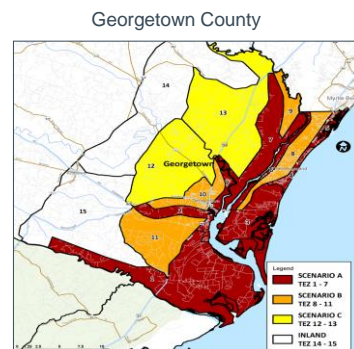
Evacuation Zones

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Evacuation Zones

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Socioeconomic / Land Use Data

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- Population changes

County	Population			Seasonal Units
	2000 Projections*	2010 Census	2030 Projections	
Horry	200,000	269,260	371,700	80,000 base plus 15% growth
Georgetown	55,000	60,190	65,100	10,000 base plus 15% growth

*The 2000 U.S. Census data was not yet completed for the 2000 HES; therefore, a growth factor was applied to the 1990 U.S. Census data for the 2000 HES effort.

Evacuation Behavioral Assumptions

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- Participation rates
- Destination percentages
- Vehicle usage

Route Assumptions

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- "No Build" Alternative - Existing road network with planned improvements
- Reverse laning of US 501 from Aynor/Conway Bypass to Marion
- Reverse laning of SC 544 to Conway only for base year
- Best "guess" at future alignment of potential projects (I-73 and SELL)



Clearance Time Comparison

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Generalized Evacuation Clearance Times Category 4/5 High Tourist Occupancy

Overall County Clearance Times / Worst Bottlenecks	2011 Base Year (w current SLED & SCDOT reversals)
Horry County	28.3
Georgetown County	22.2

Worst Bottlenecks:

- US 378 wb 2 lane section
- US 501 at Carolina Forest/Outlet Mall Area
- US 501 from SC 544 to Conway

Clearance Time Comparison

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Generalized Evacuation Clearance Times Category 4/5 High Tourist Occupancy

Overall County Clearance Times / Worst Bottlenecks	Planning Year and Roadway Alternative		
	2030 No Build (w no reversals)	2030 No Build (w current SLED & SCDOT reversals)	2030 No Build-Realistic (w only 501 Aynor to Marion reversal)
Horry County	57.8	35.5	44.7
Georgetown County	27.6	24.6	27.6
Worst Bottlenecks:			
	US 501 from Conway Bypass to Marion	US 378 wb 2 lane section	US 501 from SC 544 to Conway
	US 501 from SC 544 to Conway	US 501 at Carolina Forest/Outlet Mall Area and US 501 from SC 544 to Conway	US 501 from Conway Bypass to Marion
	US 501 at Carolina Forest/Outlet Mall Area	US 501 from Conway Bypass to Marion	US 501 at Carolina Forest/Outlet Mall Area

Clearance Time Comparison

Generalized Evacuation Clearance Times Category 4/5 High Tourist Occupancy

Overall County Clearance Times / Worst Bottlenecks	Planning Year and Roadway Alternative		
	2030 I-73 Only (w no reversals)	2030 SELL Only (w only 501 Aynor to Marion reversal)	2030 I-73 & SELL (w no reversals)
Horry County	39.4	37.2	32.4
Georgetown County	27.0	19.4	19.4
Worst Bottlenecks:	US 501 from SC 544 to Conway	US 501 from Conway Bypass to Marion	I-73 Proposed Corridor
	I-73 Proposed Corridor	US 501 from SC 544 to Conway	US 501 from SC 544 to Conway
	US 521 wb out of Georgetown County	SC 9 from Green Sea to Nichols	US 521 wb out of Georgetown County

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Proposed I-73 Corridor Evacuation Time Impacts

- I-73 facility (without SELL) provides major relief to the inland US 501 corridor
- Lesser relief to the US 501 section between SC 544 and Conway
- SC 31 and the Conway Bypass are used more robustly as evacuation corridors
- Major relief to US 501 near Carolina Forest/outlet mall bottleneck area and SC 9

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Proposed I-73 Corridor Evacuation Time Impacts

- Allows interstate traffic flow in the direction approximately 75% of evacuees want to travel
- I-73 built (without the SELL project) provides a 5 hour clearance time saving / translates to 40,000 more people able to escape
- Provides a slight improvement to Georgetown County clearance times
- Alleviates the need for reverse laning of US 501 from Aynor to Marion

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Proposed SELL Corridor Evacuation Time Impacts

- SELL facility (without I-73) provides major relief to US 501 corridor between SC 544 and Conway
- More efficient route for southern Grand Strand and northern Waccamaw Neck evacuees to US 378 wb and US 501 nb at Conway Bypass junction
- Provides major congestion relief to US 521 in and west of Georgetown
- SELL built (without I-73) provides 7 hour clearance time saving / translates to 50,000 more people able to escape

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Proposed SELL Corridor Evacuation Time Impacts

- Provides improvement to Georgetown County's future evacuation times (saving 8 hours)
- Keeps Georgetown clearance times within the National Hurricane Center's 24 hour warning window
- Moderate relief to the US 501 near Carolina Forest/outlet mall area

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Proposed I-73 and SELL Joint Corridor Evacuation Time Impacts

- Both would provide major relief to two critical bottlenecks (US 501 corridor between Aynor and Marion and US 501 between SC 544 and Conway)
- Achieve interstate traffic flow in direction approximately 75% of evacuees want to travel
- Increase usage of SC 31 and Conway Bypass as relief corridors to area roadways
- Provides relief to US 501 near Carolina Forest/outlet mall bottleneck area

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Proposed I-73 and SELL Joint Corridor Evacuation Time Impacts

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- Major evacuation congestion relief to SC 9 and US 521 in and west of Georgetown
- Both built would provide 12+ hours of clearance time savings / translates to 90,000 more people able to escape
- Alleviates need for reverse laning implementation of US 501 from Aynor to Marion and US 501 from SC 544 to Conway
- Both provide a major improvement to Georgetown County's future evacuation times (8 hour savings)

Proposed I-73 and SELL Joint Corridor Evacuation Time Impacts

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- Both improvements would keep Georgetown times within the National Hurricane Center's 24 hour warning window
- More efficient route for southern Grand Strand and northern Waccamaw Neck evacuees to US 378 wb and I-73 nb at the Conway Bypass junction

Study Limitations

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- Generalized planning study to provide system level impacts of I-73 and SELL implemented alone or in combination.
- Makes no assertion as to the environmental feasibility or community impacts and acceptability of either corridor.

Not to be used for:

- Environmental or state regulatory documentation regarding specific project approvals.
- EIS level documentation and analysis.

Contact

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