

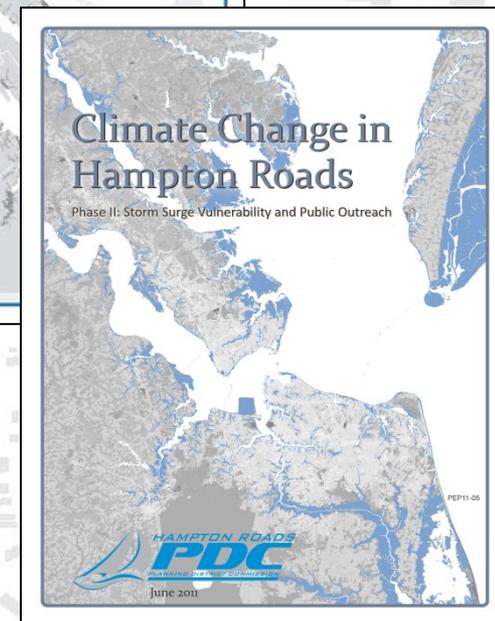
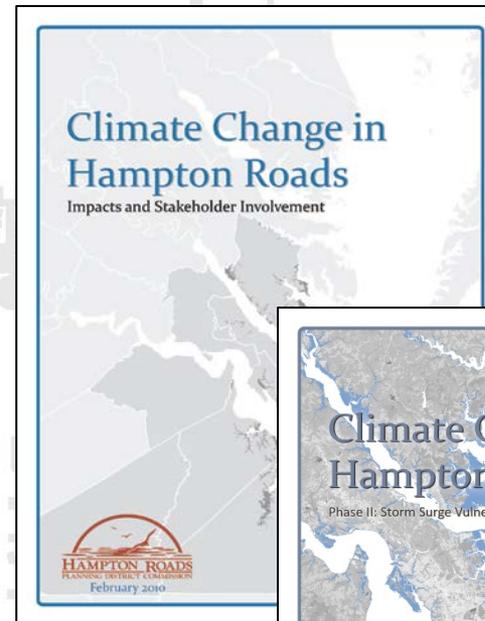
Regional Climate Change Project – Phase III Final Report

Presented to the
Hampton Roads Planning District Commission
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Regional Planner
June 21, 2012



Project Background

- Funded by Focal Area Grant from Virginia Coastal Zone Management Program
- Three-year project
 - Year 1: General Impacts of Climate Change on Hampton Roads
 - Year 2: Storm Surge
 - Year 3: Sea Level Rise

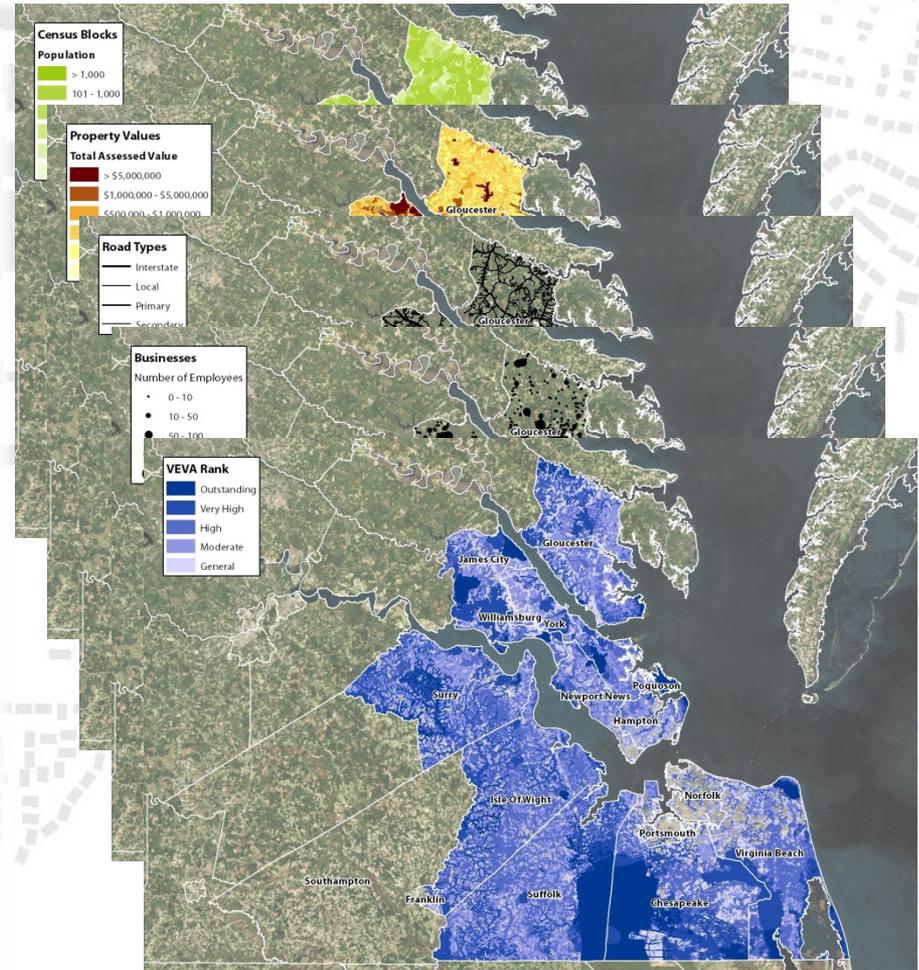


Year 3: Sea Level Rise Study

- The purpose of this study was to provide answers to two questions:
 1. Which areas in Hampton Roads are vulnerable to sea level rise?
 2. How much is potentially at risk in those areas?

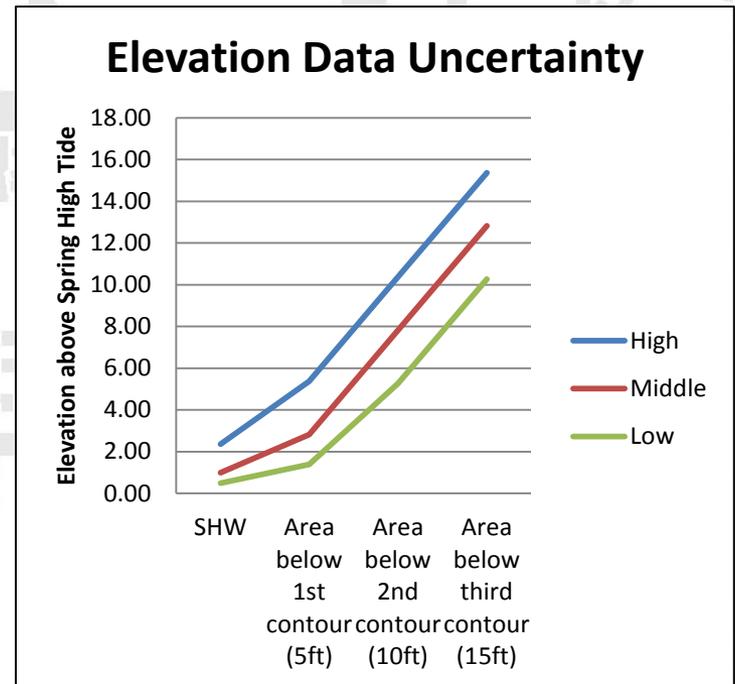
Study Goals

- Two Goals
 - Develop a GIS tool to model the impacts of future sea level rise on the region
 - Demonstrate the use of this tool to assess the region's exposure to sea level rise
 - Population
 - Property
 - Infrastructure
 - Economic activity
 - Natural Resources

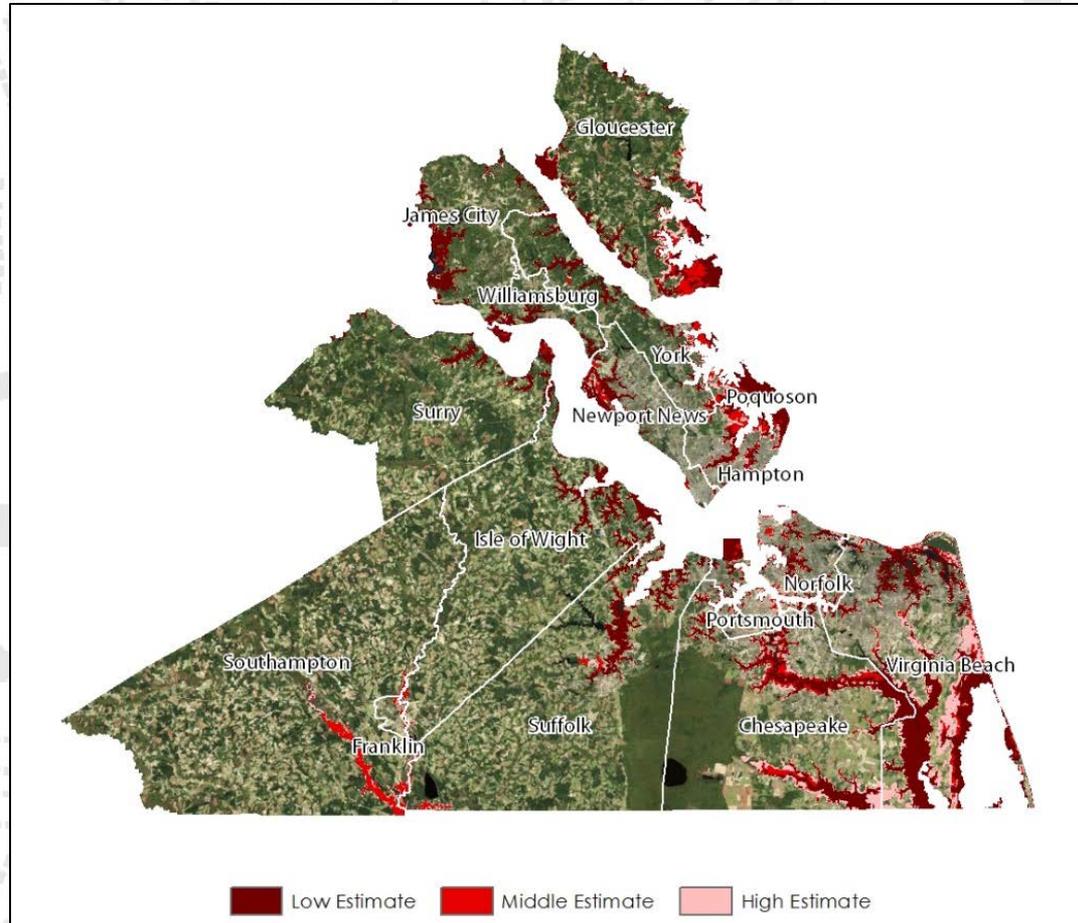


Methodology

- Step 1: Identify Vulnerable Areas
 - Elevation relative to spring high tide
 - Three elevation estimates to account for data uncertainty
 - 1-meter of sea level rise
- Step 2: Calculate assets and resources in vulnerable areas



Results



Maps showing potentially vulnerable areas under each elevation estimate

	Total	Low Estimate	Middle Estimate	High Estimate
General				
Land Area (square miles)	2,948.2	173.1	238.5	311.4
Population	1,666,310	59,059	112,794	176,124
Housing Units	677,549	24,436	45,791	71,548
Built Environment				
Number of Parcels (intersection)	605,284	39,564	61,254	84,780
Number of Parcels (centroid)	605,284	16,000	35,654	58,651
Improvement Value of Parcels (intersection)	\$128,305,696,321	\$20,328,915,919	\$26,161,421,399	\$30,833,003,959
Improvement Value of Parcels (centroid)	\$128,305,696,321	\$4,142,308,080	\$8,766,633,550	\$13,410,140,979
Infrastructure				
Roads (total miles)	11,767.2	161.5	506.8	877.2
Roads (Interstate)	249.9	5.7	14.0	17.8
Roads (Primary)	1,460.4	17.1	49.6	77.3
Roads (Secondary)	2,216.3	24.0	72.2	98.2
Roads (Local or Private)	7,840.7	114.7	371.1	683.9
Economy				
Businesses	57,579	575	2,026	3,659
Employees	719,835	5,237	25,088	50,869
Total Value of Parcels (intersection)	\$215,436,678,988	\$38,892,731,860	\$48,067,888,230	\$56,306,819,672
Total Value of Parcels (centroid)	\$215,436,678,988	\$8,513,744,141	\$16,466,833,462	\$25,104,125,807
Natural Environment				
Protected Lands (acres)	224,497	34,122	38,800	46,251
VEVA – Outstanding (acres)	166,276	19,257	20,454	23,566
VEVA – Very High (acres)	319,728	48,947	58,707	70,994
VEVA – High (acres)	374,797	31,007	42,798	57,285

Tables summarizing potential impacts to each sector under each elevation estimate

Findings and Recommendations

- The necessary regionally consistent, high-resolution elevation data is not yet available for Hampton Roads
- Sea level rise will be a major issue for several localities
- HRPDC staff is working with local, state, and federal partners to acquire the data
- Localities should begin planning for sea level rise through comprehensive and other plans

Findings and Recommendations

- There is no official state or federal guidance for addressing sea level rise
- USACE has developed guidance for incorporating sea level rise into infrastructure projects
- Hampton Roads should work with state and federal elected officials to develop and fund guidance and assistance to affected communities
- Localities and others should consider using the guidance for project planning and design

Findings and Recommendations

- Subsidence and its impacts on local sea level rise are not well-documented
- Effective adaptation strategies will vary based on context, feasibility, and popular support
- The region should continue to study the causes and rates of subsidence in Hampton Roads
- The region should continue studying potential strategies for adapting to sea level rise and other impacts of climate change

Next Steps

- Commission discussion of comments, questions, and concerns
- Local government staff review and comment through Joint Environmental Committee
- Report presented for approval at the July HRPDC meeting