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Screening for Local Business and Government Vulnerability to Sea-Level Rise in Coastal Virginia

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Screening for Local Business and Government Vulnerability to Sea-Level Rise in Coastal Virginia

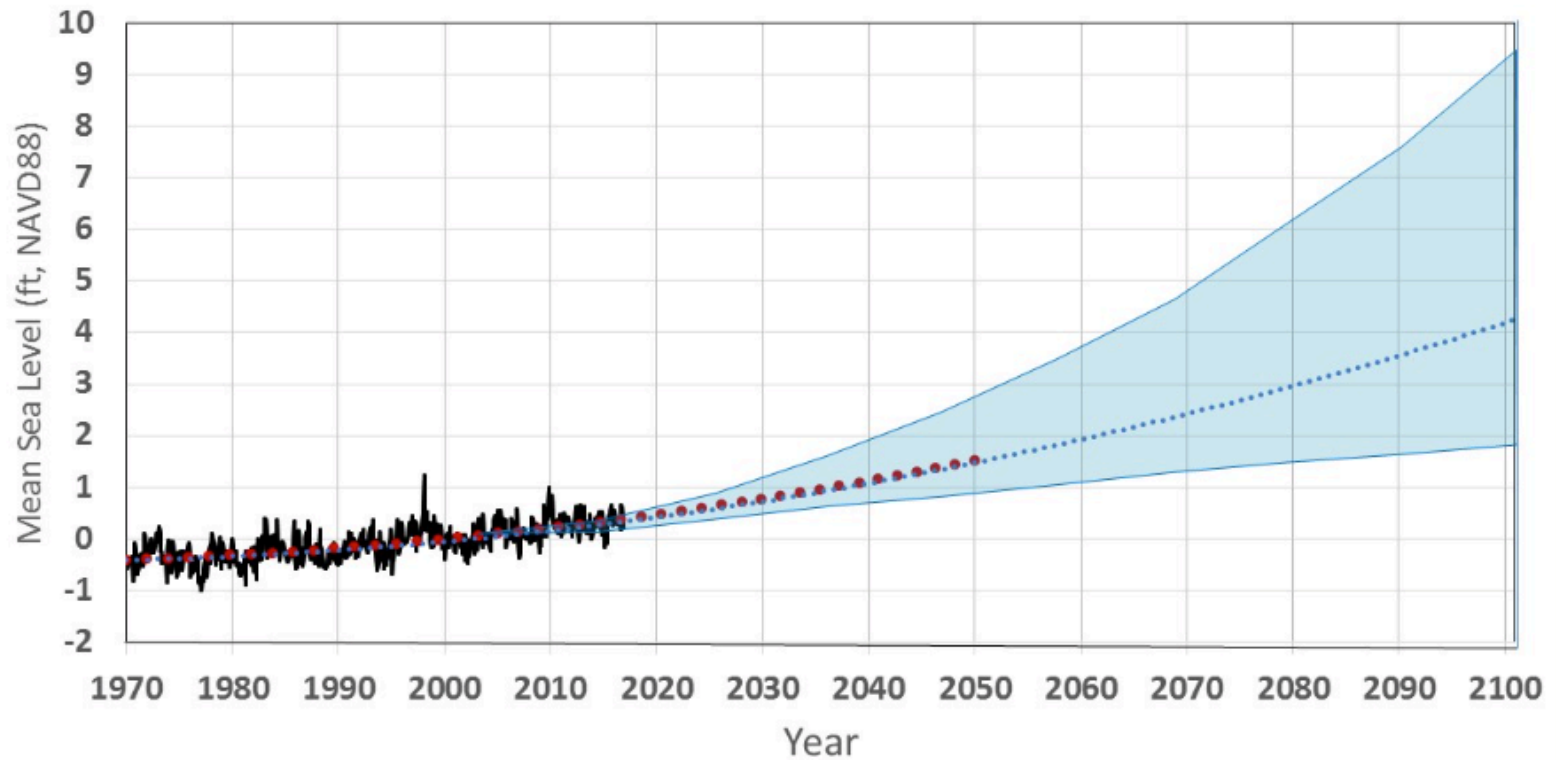
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Virginia is in trouble...

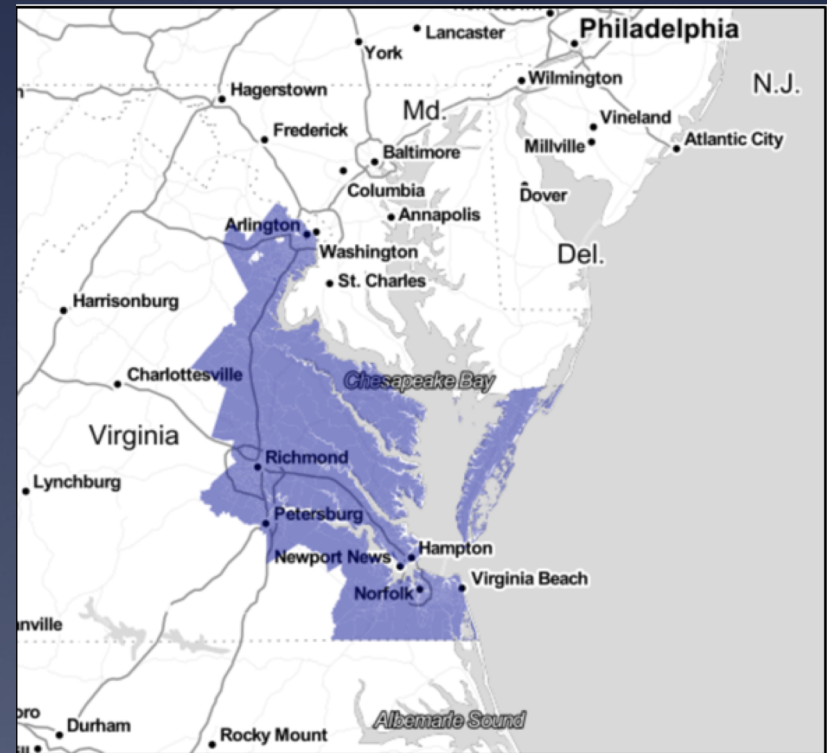
Sea Level in Virginia
Historic data and projections

ADAPTVA



Lots of Property at Risk

- * Coastal Virginia is home to almost 5 million people.
- * Over 50,000 homes worth over \$17 billion in property value sit on land less than five feet above the current high tide line in Coastal Virginia.
- * About 200,000 homes worth almost \$55 are less than nine feet above high tide, and under the highest SLR predictions, we could be there by the end of the century.



Goal of this Exercise

- * Using screening metrics to identify localities whose local economy and government could be vulnerable to natural disasters stemming from climate change, as well as long-term sea-level rise.
 - * Screening measures can be easily updated using publicly available data.
 - * Methodology is transparent to staff, elected officials and citizens.

Potential Indicators of Business and Local Economic Vulnerability

- * Economic Diversity: HHI of 2-digit NAICS industries
- * Percentage of Small Businesses: employment at business with <20 employees
- * Presence of Nonemployer Establishments
- * Percentage of Retail and Wholesale Trade
- * Percentage of Tourism Businesses
- * Percentage of Leisure Oriented Businesses : arts, entertainment, recreation, accommodations and food service
- * Percentage of Land-Dependent Businesses: agriculture, forestry, hunting, fishing and real estate
- * Trends in Economic Conditions: percent change in payroll from 2010 to 2015

Localities that Cross Business and Local Economic Vulnerability Thresholds (Table 2)

Localities	BE1: Lack of Economic Diversity	BE2: High Percentage of Small Businesses	BE3: Significant Presence of <u>Nonemployer</u> Establishments	BE4: High Percentage of Retail and Wholesale Trade	BE5: High Percentage of Tourism Businesses	BE6: High Percentage of Leisure Oriented Businesses	BE7: High Percentage of Land- Dependent Businesses	BE8: Declining Economic Conditions
King George	X							
Mathews		X	X	X	X			
Northumberland		X	X				X	
Middlesex		X			X	X		
King and Queen			X				X	X
Poquoson			X					
Colonial Heights				X		X		
Gloucester, Hanover, Prince George				X				
Williamsburg					X	X		
Northampton						X	X	
James City, York						X		

Potential Indicators of Local Government Vulnerability

- * Net Position per Capita: net assets per capita
- * Percent of Expenses Spent on Health and Welfare
- * Percent of Revenues from Tourism
- * Percent of Revenues from Property Tax
- * Net Position to Capital Assets

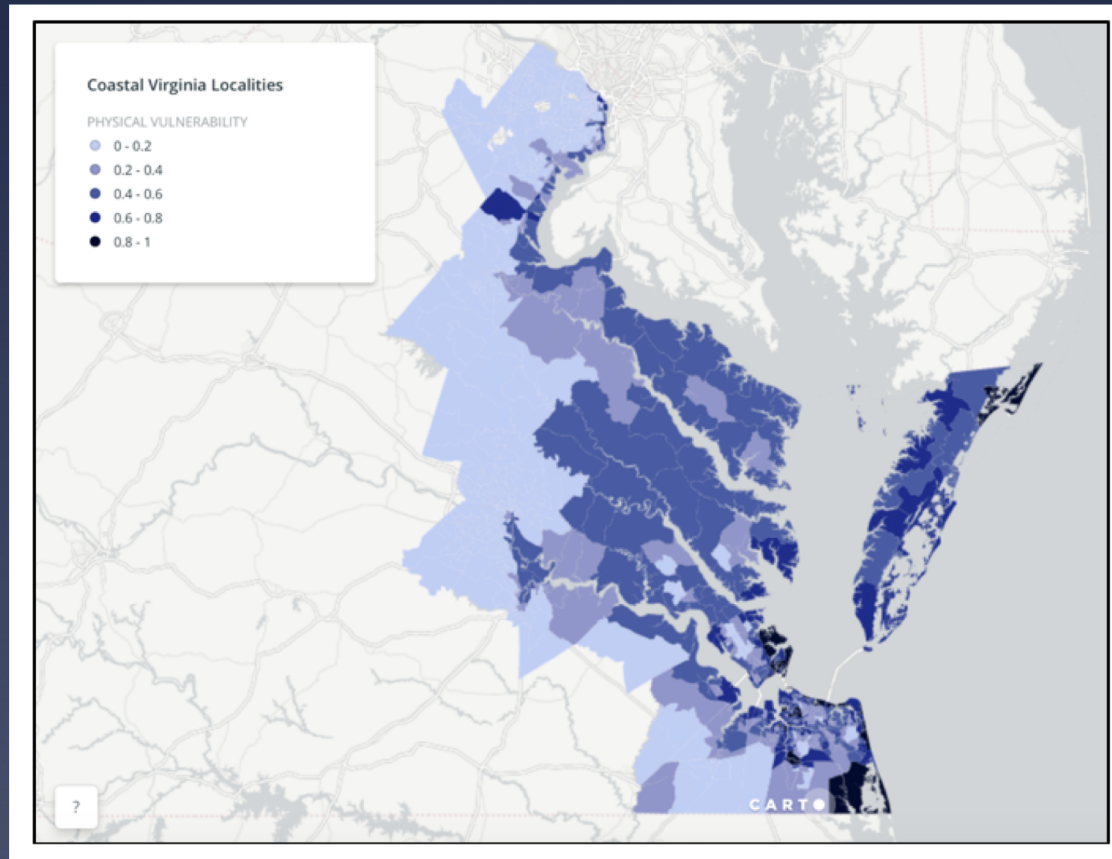
Localities that Cross Local Government Exposure Thresholds (Table 3)

Localities	G1: Net Position per Capita	G2: Pct. Exp. Health and Welfare	G3: Pct. Rev. from Tourism	G4: Pct. Rev. from Property Tax	G5: Net Position to Capital Asset Ratio
Isle of Wight	X			X	X
Fairfax (County), Prince William	X				
King and Queen		X			
Colonial Heights, Williamsburg			X		
Charles City, King William,				X	
Northumberland, Surry					
Richmond (County)					X

Physical Vulnerability Index

- * Index composed of five equally weighted components for each census tract:
 - * Percent of the census tract with elevation ≤ 10 ft. above sea level.
 - * Volume of land between sea level and 10 ft. above sea level relative to the area of land between these two thresholds.
 - * Percentage of land 10 ft. below sea level that is developed.
 - * Average wave energy along the tract's shoreline.
 - * Average tidal range along the tracts shoreline, including tidally influenced tributaries .

Physical Vulnerability of Coastal Virginia



Localities with Combined Vulnerabilities (Table 5)

Physical Vulnerability	Localities (Thresholds Exceeded)
Highest: >0.5	Matthews (BE2, BE3, BE4, BE5), Northampton (BE6, BE7), Poquoson (BE3)
Very High: 0.4 – 0.5	King and Queen (BE3, BE7, BE8, G2), King William (G4), Middlesex (BE2, BE5, BE6), Northumberland (BE2, BE3, BE7, G4), York (BE6)
Moderately High: 0.3 – 0.4	Charles City (G4), Colonial Heights (BE4, BE6, G3), Gloucester (B4), James City (B6), King George (B1), Richmond County (G5)