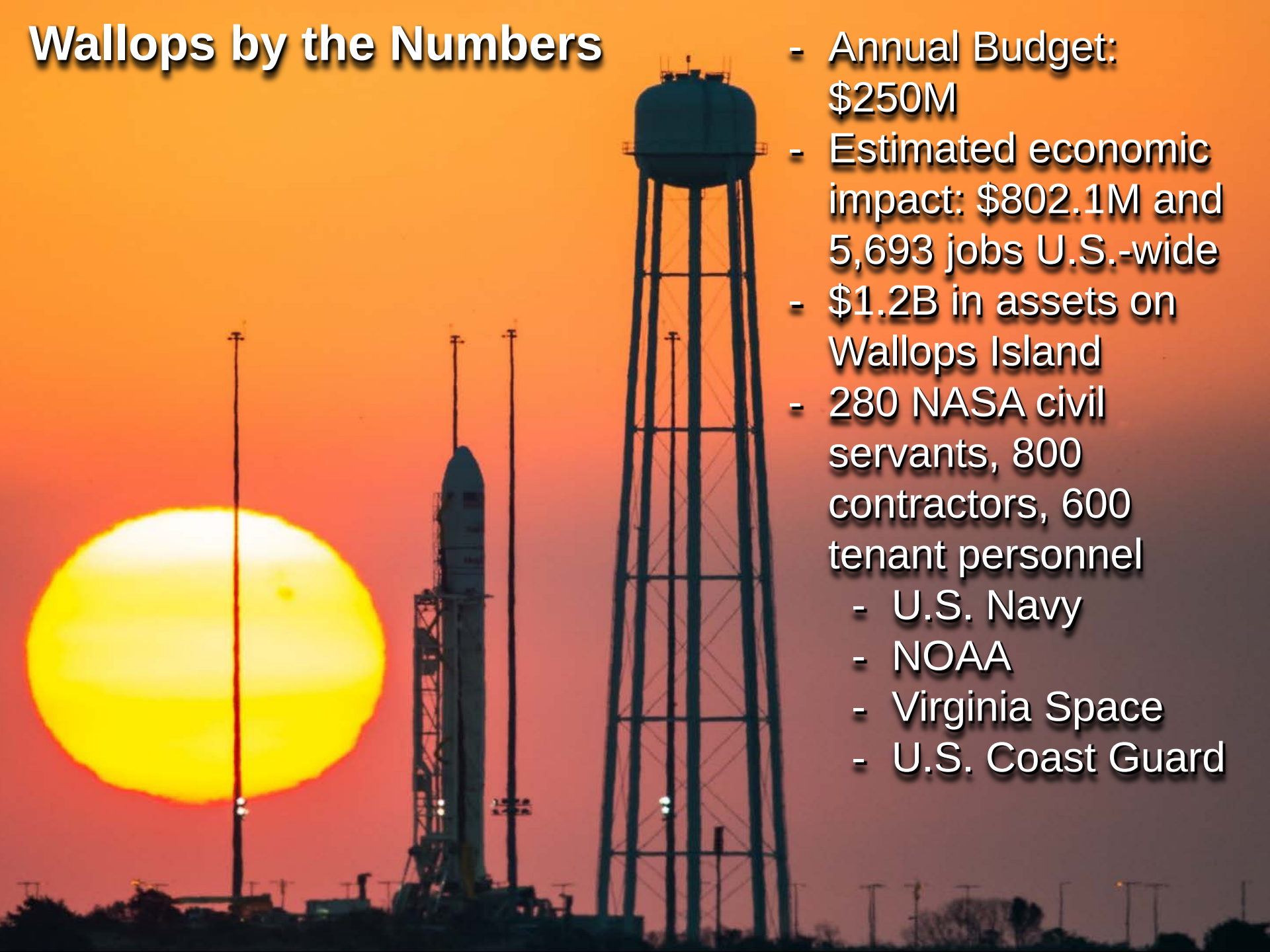
National Aeronautics and
Space Administration

Coastal Resilience at NASA Wallops

Bill Wrobel, Director

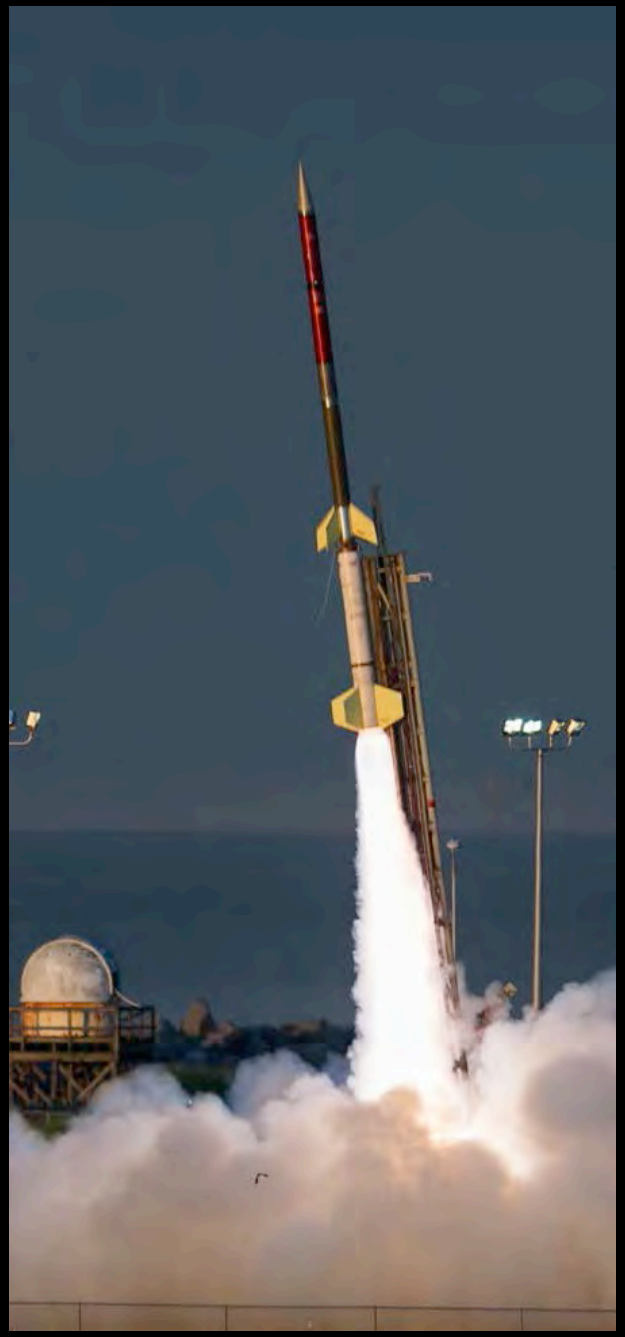
Wallops by the Numbers



- Annual Budget: $250M
- Estimated economic impact: $802.1M and 5,693 jobs U.S.-wide
- $1.2B in assets on Wallops Island
- 280 NASA civil servants, 800 contractors, 600 tenant personnel
  - U.S. Navy
  - NOAA
  - Virginia Space
  - U.S. Coast Guard

The Wallops Mission:

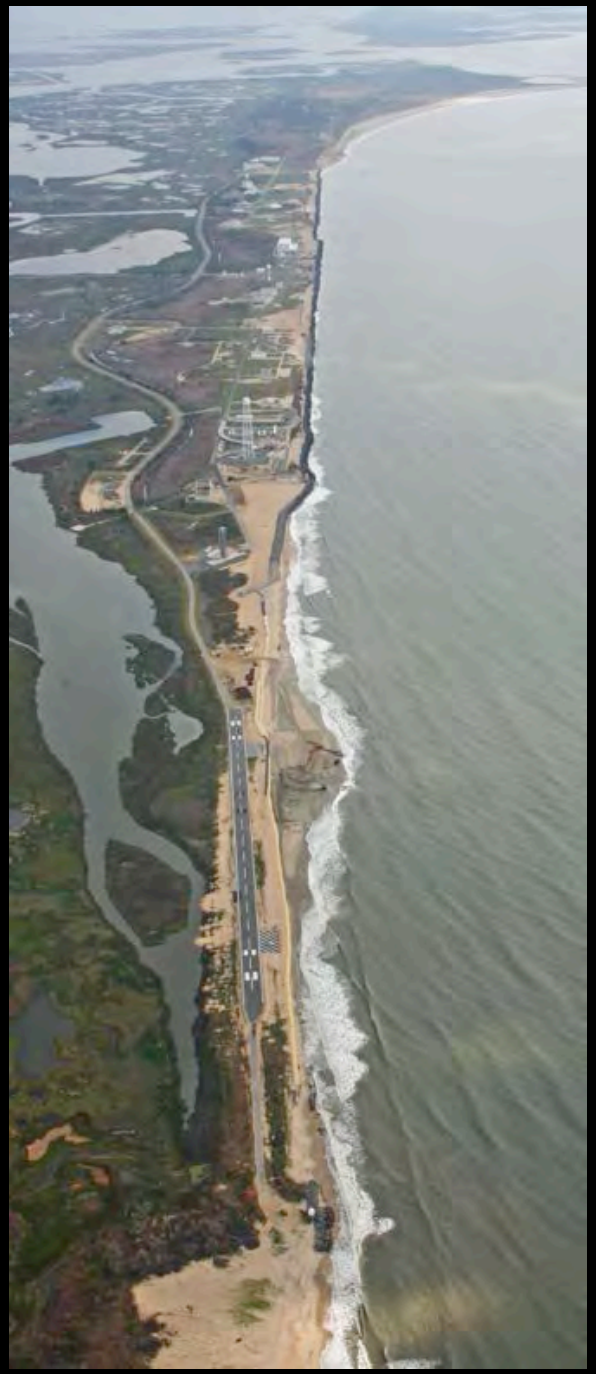
Wallops provides agile, low-cost flight and launch range services to meet gov't and commercial sector needs for accessing flight regimes worldwide from the surface to the Moon and beyond



The Wallops Launch Range

Our Approach to Coastal Resilience

- Only essential functions on the Island
- No critical infrastructure below 11-feet mean sea level
- Shoreline Protection



Wallops Shoreline Protection Project

- 5 years of planning; w/Army Corps of Engineers
- 3.2 million cubic yards of sand
- Outward beach expansion: 250 feet (+200 feet subaqueous) over 19,600 feet of coastline
- $40 million investment protecting $1.2 billion in assets

Shoreline Protection Put to the Test

- Hurricane Irene
  - August 2011
  - Max Winds: 62 mph
  - Total rain: 6.62”
  - Wachapreague height above mean level low water (MLLW): 8.40’ (or, about 4 feet of storm surge
- Hurricane Sandy
  - October 2012
  - Max Winds: 68 mph
  - Total rain: 8.48”
  - Wachapreague height above mean level low water (MLLW): 8.40’ (or, about 4 feet of storm surge

- In sum, similar storms with one critical difference: Shoreline Protection (beach/seawall) in place for Sandy, not Irene

Hurricane Irene: One hour before high tide

- Seawall is breached; HIF/Island road and buildings flooded; power is out; no work could be accomplished for several days

Hurricane Sandy: One hour before high tide

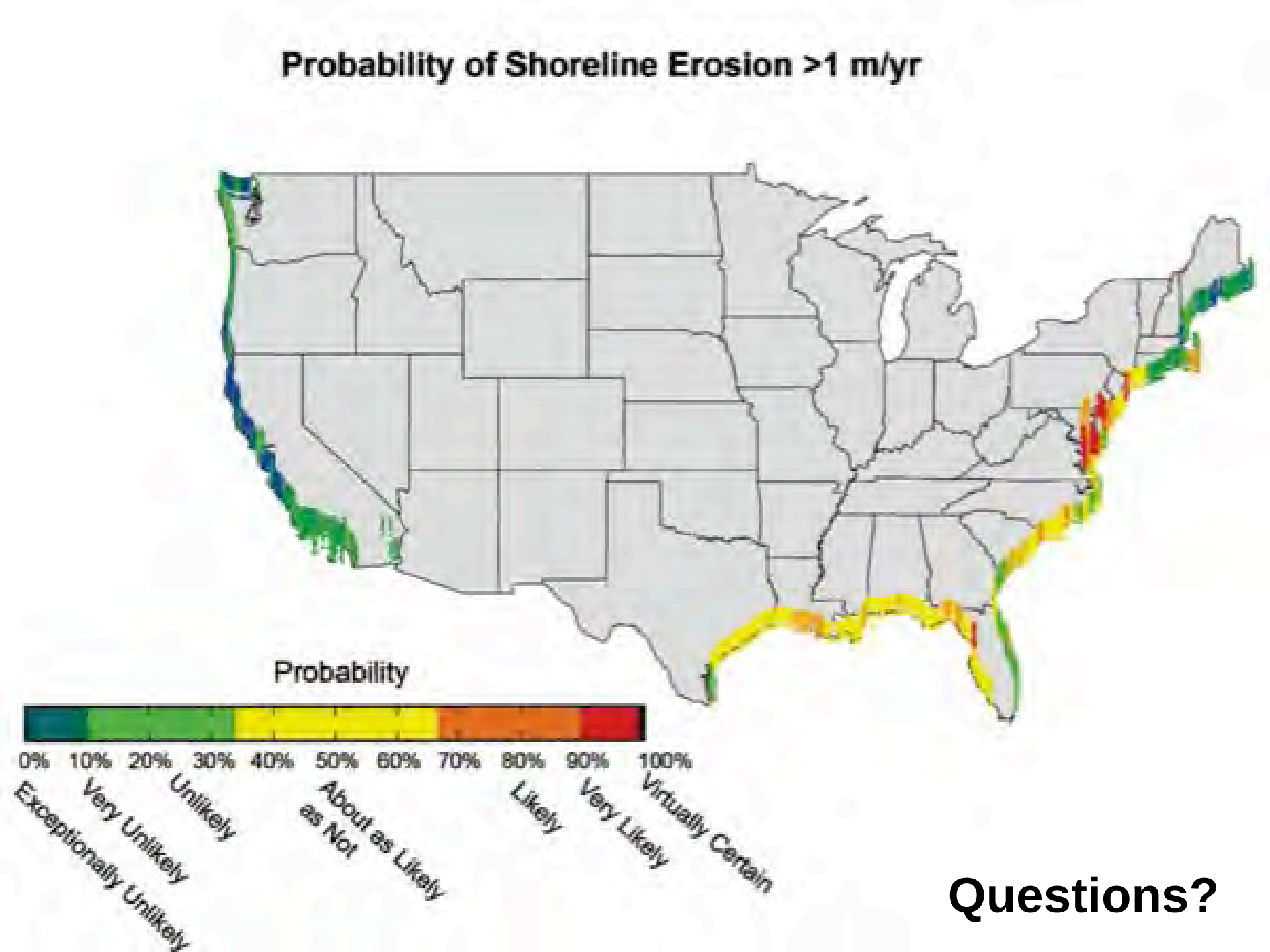
- No breach; beach and seawall are absorbing wave energy; no roads or buildings flooded; power is on; work resumes the next day

Post-Hurricane Sandy

- About 20 percent of the beach lost
- Sandy Supplemental: $11.34 million for an out-of-cycle renourishment
- 650,000 cubic yards of sand

Mid-Atlantic Coastal Resilience Institute (MACRI)

- MACRI will be the platform to combine and leverage the capabilities of participating institutions to provide an unprecedented integration of science and its applications to understand, predict, and integrate resilience for both human and natural coastal communities into local, state, and regional policy planning
- First MACRI investigation conducted at Wallops in September


Probability of Shoreline Erosion >1 m/yr
Probability
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Exceptionally Unlikely
Very Unlikely
Unlikely
About as Likely as Not
Likely
Very Likely
Virtually Certain

Questions?