3.9.3. WORCESTER COUNTY, MD

Population Density	109 / sq. mi.
Form of Government	County
Category	Seasonal Ocean and Bayfront
CRS Rating	Not Participating

Median Household Income	Median Per Capita Income	% Owner Occ	Population	2000-2010 Pop Growth Rate	% White	% Hispanic	% Minority	% Seasonal Housing
55769	32936	29.5	51454	1.01	82.0	3%	19.7%	49.5

Adaptations	Status	Incorporates CC	Type	Impact	Standard Costs		Funding Source
Comprehensive Plan - Incorporates Climate Change	Completed	Yes	Procedural	Recommendation	Above Required	NA	State, Other
Freeboard - 2 Ft.	Implemented	No	Accommodation	Mandatory	Unique	Zero	None
Hazard Mitigation Plan - Incorporates Sea Level Rise	Completed	Yes	Procedural	Recommendation	Above Required	NA	Other
Preservation of Assateague Island	Implemented	No	Retreat	NA	Unique	NA	Other
Worcester County Sea Level Rise Response Strategy	Completed	Yes	Procedural	Recommendation	Unique	Very Low (< $1,000)	None

CONTACTS

David M. Bradford, Natural Resources Administrator
dbradford@co.worcester.md.us

Ed Tudor, Director, Dept. of Development Review and Permitting
etudor@co.worcester.md.us

Worcester County
1 W. Market St., Room 1201, Snow Hill, MD

410-632-1200
443-944-6152

POPULATION AND GEOGRAPHY

Worcester County, Maryland, stretches the length of Maryland's Atlantic Ocean shore, from Ocean City to Assateague Island National Seashore. The county borders the Atlantic Ocean on its east, Somerset County on its west, Wicomico County to the northwest, the state of Virginia on its south, and Delaware on its north.

As with the rest of the Delmarva Peninsula, the county is mostly level terrain. It ranges from sea level to 49 feet at its highest point. The population of the county was 51,454 as of 2010, comprising an area of 695 square miles (229 sq. mi. of which is under water). There are 109.9 people per square mile. The population is 83% white, 13.9% black, and 3.3% Latino of any race. Median per capita income was $31,520, household income was $55,487, and 121 building permits were issued in 2011.

Worcester's comprehensive plan describes the county in this way:

> [I]t would be difficult to find a similar seaside county with a premier family resort, compact communities served by near-by shops and stores all of which are bounded on the west by rich working farms and woodlands and on the southeast by wild barrier island parks. Blessed with such richness and diversity, Worcester County faces a challenge to continue its high quality of life (Worcester County, Md., Comprehensive Plan p.1).

Worcester's barrier island environment evidences perhaps the most dramatic contrast between development and preservation anywhere on the East Coast. The northern portion, consisting of Ocean City, is an entirely built-out environment complete with miles of high-rise hotels, all-you-can-eat seafood buffets, and miniature golf courses. This concentration of tourist facilities represents the largest component of the county's economy, employing over 60 percent of the county's labor force (p.2).

The southern portion—Assateague Island National Seashore— is nearly entirely undeveloped. The mainland part of the county remains largely sparsely settled and agricultural. This dramatic contrast is also evidence of the shifting "planning philosophy [which] evolved from a development emphasis to a priority on resource conservation and protecting its rural and coastal character" described in Worcester's Comprehensive Plan (p.2). Planning for the future in Worcester focuses on preserving its assets and minimizing development in sensitive and vulnerable locations.

COASTAL ISSUES

The meteorological history of Worcester County had a major influence on its land use trajectory. In 1933, a major hurricane battered the coast and cut an inlet near the southern boundary of Ocean City. The inlet was prevented from filling in by the natural littoral drift through the construction of jetties and dredging. That storm also seriously damaged Ocean City.

It was the 1962 nor'easter, however, that changed the trajectory of land use on Assateague. The storm caused extensive damage to much of the housing stock on the island and set in motion the eventual establishment of the National Seashore.

Worcester County's numerous tidal rivers, creeks, and bays are highly vulnerable to inundation and will become more so according to sea level rise projections. The Comprehensive Plan describes the direct impacts of sea level rise in Worcester County to include inundation of wetlands and lowlands; accelerated coastal erosion; increased flooding; raised water tables; and increased salinity of bays, rivers, and aquifers. The Maryland Department of Natural Resources determined that the storm surge from Hurricane Isabel in 2003 was one foot higher than the 1933 storm because of the higher sea level.

The *Worcester County Sea Level Rise Response Strategy* details which areas of the county are most vulnerable to flooding and erosion and will be the most significantly impacted. Ocean City is clearly at risk, and their adaptations are dealt with separately in this report. Worcester County's Snug Harbor neighborhood experiences repetitive flood losses, and is predicted to be "permanently inundated without protection measures" according to the sea level rise guidance document" (Worcester County Sea Level Rise Response Strategy (2008), p.18). The neighborhood of Ocean Pines, with 15,000 residents, was built on filled wetlands and is also at serious risk.

The county has 44 repetitive loss properties, representing 12% of all the repetitive loss properties in Maryland. Other areas that flood frequently include Western Berlin, Pocomoke River floodplains in Snow Hill and Pocomoke, Porter Crossing Road Bridge, and Whiton Crossing Bridge. Worcester has a history of planning leadership and its planned adaptations demonstrate it is taking these threats seriously.

Assateague Island National Seashore

Although not a recently implemented adaptation—and one that is certainly not low-cost and therefore quite distinct from the other types of projects profiled in this report—the preservation of Assateague Island merits attention here. Assateague Island, now populated only by its famous ponies, was once settled and platted for intense development.

Notions of preserving Assateague circulated in Congress as early is 1920, but pressure from developers did not subside after World War II. Leon Ackerman led a group of Baltimore and Washington investors in acquiring and subdividing 15 acres just north of the Virginia line, which he named Ocean Beach. Full-page ads coaxed 3,200 investors across the newly opened Chesapeake Bay Bridge to purchase almost 6,000 lots, and 30 homes were constructed. But a devastating nor'easter hit on March 6, 1962. Dunes were destroyed and the wind and water razed all but 16 cottages in the most protected bayside locations. The protective dunes were severed in many places, high winds and water destroyed all but the sturdiest structures, and the road was washed out and buried.

According to Barry Macintosh, "The storm, which had undone much of the development for which Assateague had been discounted in the 1955 National Park Service survey report and which augured ill for future private investment, galvanized Secretary of the Interior Stewart L. Udall to revive the prospect of Federal acquisition" (Macintosh 1982). The federal government subsequently recommended establishing a national seashore and purchasing the privately held land from lot owners.

At the time, Worcester County officials and most property owners were opposed to the concept of a federal government–owned seashore. Instead they had a vision for a residentially developed island. A document prepared by the county testified to its stance: "Worcester County does not believe that it is necessary or that it is warranted that the Federal Government condemn Assateague Island for a Federal recreation project, and does not believe that it would become anything but a barren wilderness useful only to bird watchers..." Today, it seems impossible to imagine this pristine stretch of barrier island as anything else. It deserves mention as a farsighted, critically important adaptation to climate change for Worcester County.

Worcester County Sea Level Rise Response Strategy

Research on the impact of sea level rise on Maryland's shore has significant historical precedent. In 2003, the Maryland Department of Natural Resources (DNR) developed a sea level rise inundation model using methods originally derived by the U.S. Geological Survey for the Blackwater Wildlife Refuge in Dorchester County, MD. Worcester County was chosen as the pilot county because LIDAR data had been completed in 2003 as well as numerous policy objectives that specifically targeted the area, such as the Coastal Bays Hazard Initiative.

A sea level rise inundation model and report was drafted by the Maryland Department of Natural Resources and the U.S. Geological Survey in November 2006. The report was partly funded by the Coastal Zone Management Act. Beatley (2009) also interviewed and documented Worcester County's extensive efforts to work toward coastal resilience.

The Worcester Sea Level Rise Response Strategy was completed in 2008, supported by a grant from DNR. The report modeled sea level rise for the years 2025, 2059, and 2100 and used three scenarios: steady state, average accelerated, and worst case. These scenarios allowed the county to understand projected impacts from extrapolated existing conditions to the most drastic potential. The report includes a vulnerability analysis, potential response options, and a chapter on priorities for sea level rise response, including setting criteria for prioritization and a ranking

matrix. It addresses adaptation options for existing development, future development, infrastructure, and natural systems.

The report makes specific suggestions for application of the adaptation principles to Worcester County and describes methods for integration with existing codes and plans. The Comprhensive Plan supports the sea level rise plan by designated large tracts of sensitive coastal land as conservation. Worcester's sophisticated planning limits sprawl by maintaining compact communities surrounded by agricultural and natural lands. This strategy comports well with projected sea level scenarios, since the plan reports that 30% of the property parcels projected to be 100% inundated by the worst case scenario in 2100 do not currently house any structures. (Worcester County Sea Level Rise Response Strategy (2008) p. 24). Growth for 18,000 new residents will be located in designated growth areas by infilling existing communities.

The plan also lays out a sophisticated set of criteria for prioritizing responses, which demonstrates sensitivity to the complex land use, political, and economic environment for adaptation strategies. The criteria include legal authority; institutional feasibility, consistency with community vision, political feasibility, expected benefits and costs, minimizing opportunity costs, urgency considerations, impact on environmental quality, equity impacts, demonstrated effectiveness, and potential resource availability. The plan overall positions Worcester with extensive knowledge on the potential use of different tools and their likely effectiveness given the unique circumstances, existing conditions, and regulatory systems already in place in the county.

SEA LEVEL RISE RESPONSE STRATEGY ACTION RECOMMENDATIONS
Adaptation for Existing Development

Protection Options
Structural Protection
Non structural protection

Accommodation Options
Rolling Easements
Elevation and Floodproofing Retrofits
Restrictions on Septic Tank and Hazardous Materials Storage

Retreat Options
Property Acquisition and Relocation
Redevelopment Restrictions
Setbacks and Buffers
Downzoning and TDR
Property and Easement Acquisition
Restrictions on Public Facilities and Infrastructure

Adaptation for Future Development
Protection
Accommodation
Temporary or Movable Structures
Elevation and Floodprooding Requirements
Subdivision Control

Comprehensive Plan – Incorporates Climate Change

The Comprehensive Plan for Worcester County, adopted by the County Commissioners on March 7, 2006, focuses development on smart-growth locations in existing towns and cities and away from coastal hazards and floodplains. Although historical precedent has placed a large portion of development in hazardous areas, existing development is highly concentrated in Ocean City, adjacent areas of the mainland called West Ocean City, and in the historic towns of Berlin and Snow Hill. The plan states that one of its "fundamental purposes is to continue the county's concentrated development pattern" (Worcester County, Md. Comprehensive Plan 2006 p.3)

The plan's goal statement is as follows:

> This plan's goal is to maintain and improve the county's rural and coastal character, protect its natural resources and ecological functions, accommodate a planned amount of growth served by adequate public facilities, improve development's compatibility and aesthetics, continue the county's prosperous economy, and provide for residents' safety and health (p.7).

The county's objectives for floodplain protection are:

- Limit development in floodplains.
- Reduce imperviousness of existing and future floodplain development where possible.
- Preserve and protect the biological values and environmental quality of tidal and non-tidal floodplains, where reasonable and possible to do so.

FLOODPLAIN MANAGEMENT RECOMMENDATIONS

1. Work with federal and state federal agencies to update the county floodplain maps, with first priority being areas that are mapped as 100-year floodplain without base flood elevation established.
2. Limit new development and construction in the floodplain. 33 Ibid.
3. For new development, encourage the dedication of 100-year floodplains (not including wetlands) to open space.
4. Promote uses, such as golf courses, open space easements, natural areas, and recreational open space to reduce impervious surfaces in floodplains.
5. Work to acquire properties in the 100-year floodplain, and return them to a natural state.
6. Reevaluate the effectiveness of the current floodplain protection regulations.
7. Discourage the location of new homes and roadways in the "V" or wave velocity zone and the 100-year floodplain.
8. Complete and implement a hazard mitigation plan for flooding, wildfire, and other natural hazards.
9. Develop and implement a post disaster recovery and reconstruction plan to facilitate recovery and to reduce exposure to future disasters.
10. Consider participating in the Community Rating System Program, to receive flood insurance premium credits. To participate, the flood program must address public information, mapping, regulation; flood damage reduction; and flood preparedness.
11. Consider code changes that will limit impervious surfaces.
12. Develop a sea level rise response strategy (include a two foot free board requirement for properties exposed to flooding) and discourage shoreline hardening.

The plan specifically addresses sea level rise by calling for the development of a sea level rise response strategy, and includes a 2-foot freeboard requirement for properties exposed to flooding and to discourage shoreline hardening. The county also plans on using the updated models and data generated in the Sea Level Rise Response Strategy in the next iteration of the comprehensive plan.

The plan designates growth suitability areas according to the following criteria:

1. To limit environmental damage
2. To reduce land consumption outside existing communities
3. To minimize negative impacts on natural, economic, and social resources
4. To efficiently provide adequate public facilities and services
5. To minimize adverse impacts on existing communities and to foster a cooperative approach to land use planning and development

By classifying all land into 10 categories, the county effectively encourages development only in areas well-suited for growth. The designated growth areas met certain express criteria, including that they include limited wetlands, hydric soils, floodplains and contiguous forest, and be located proximate to existing development, employment, transportation, and stormwater and sanitary infrastructure. Coastal and flood hazards were expressly considered and excluded from growth areas.

The plan was implemented through the zoning ordinance. It subsequently eliminated large lot zoning in the majority of the county, essentially banning scattered growth in greenfield areas. The county's implementation of Maryland's Atlantic Coastal Bays and Pocomoke River critical area regulations also support these land use designations by largely prohibiting new development in sensitive locations. Prescribed buffers, habitat protections, and review procedures are mandated by the state law and enforced by the county. Taken together, the county has prescribed a robust, enforceable set of laws and plans to ensure its economic, social, and climate sustainability for the future.

Hazard Mitigation Plan – Incorporates Climate Change

Worcester County's hazard mitigation plan incorporates long-term sea level rise and climate change. Regulations adopted to further these goals include the Worcester County Atlantic Coastal Bays Critical Area Program and the Buffer Management Area regulations, a 2-foot freeboard in FEMA V-zones, and impervious surface regulations in the Resource Conservation Area and Limited Development Areas.