



 USGS



Chesapeake Bay Program
A Watershed Partnership

2025 Land Use Scenarios Discussion

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CBP Land Use Workgroup Call

Alternative Future Thematic Scenarios

Forest Conservation:

Same as Historic Trends but with organizations and governments proactively pursuing a variety of actions to conserve forests and wetlands which provide the greatest benefits to society including nutrient uptake, bank stabilization, stream temperature moderation, flood hazard avoidance and minimization, and wildlife habitat. Examples priority areas include high-priority conservation areas, riparian zones, shorelines, large contiguous forest tracts, and lands adjacent to protected areas.

Growth Management:

Same as Historic Trends but with organizations and governments proactively pursuing a variety of actions to encourage growth in areas with supporting infrastructure. Example priority areas include undeveloped or under-developed areas with adequate existing roads, sewer, water, and internet.

Agriculture and Soil Conservation:

Same as Historic Trends but with organizations and governments proactively pursuing a variety of actions to conserve farmland and productive soils. Example priority areas include agricultural districts, prime farmland, farmland of state importance, and floodplains.

Chesapeake Bay Watershed Scenario Elements

- Conserve riparian zones (default width = 30m)
 - Conserve wetlands (NWI, State Designated Wetlands, and Potential Conservable Wetlands (PA only))
 - Conserve areas subject to inundation due to sea level rise (default = 1m rise by the year 2100)
 - Conserve areas surrounding National Wildlife Refuges (default = 1 mile buffer)
 - Conserve large forest tracts (default ≥ 250 acres)
 - Conserve shoreline forests and wetlands (default = 1000-ft buffer of the shoreline)
 - Conserve all high-value forest and forested wetlands identified by the Chesapeake Conservation Partnership
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- Increase proportion of growth occurring as infill/redevelopment (default = 10% per decade)
 - Increase urban densities (default = 10% per decade)
 - Increase proportion of urban vs rural growth (default = 10% per decade)
 - Expand sewer service areas (default = 1 mile buffer)
 - Avoid growth on soils unsuitable for septic systems (based on depth to bedrock, drainage class, saturated hydraulic conductivity, and flood frequency)
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- Conserve all designated Agricultural Districts and areas zoned for rural agricultural
 - Conserve the floodplain (default = 100-year recurrence interval)
 - Conserve flooded soils (default = frequently flooded)
 - Conserve prime farmlands and farmland of state importance
 - Conserve potential restorable wetlands (PA only)

Chesapeake Bay 2025 Scenario Production Schedule

Completed Scenarios (in CAST March 31st):

- Historic Trends (revised)
- Current Zoning (revised)
- Forest Conservation (revised)

Scenarios Running (90% complete and in CAST March 31st):

- Forest Conservation + Zoning
- Growth Management
- Growth Management + Zoning

Scenarios in Preparation (in CAST March 31st):

- Agricultural Conservation
- Agricultural Conservation + Zoning

State-Specific Scenarios (in CAST April – May 2018):

Under development

Pennsylvania

District of Columbia

Maryland

West Virginia

Waiting

Virginia

Delaware

New York

Scenario Results- P6 Domain

HT_ST	Impervious	Pervious	Natural	Agriculture	Mixed Open
DC	76	118	(195)	-	-
DE	5,171	18,437	(5,975)	(15,456)	(2,178)
MD	20,768	55,306	(35,734)	(35,213)	(5,127)
NY	1,283	3,872	(1,295)	(3,641)	(219)
PA	18,882	61,178	(26,511)	(48,024)	(5,526)
VA	43,841	104,120	(82,364)	(55,453)	(10,143)
WV	1,722	5,663	(1,989)	(4,759)	(636)
Total	91,744	248,694	(154,062)	(162,547)	(23,829)

CZ_ST	Impervious	Pervious	Natural	Agriculture	Mixed Open
DC	39	75	(113)	-	-
	-49%	-37%	-42%	0%	0%
DE	4,569	16,446	(4,779)	(14,088)	(2,148)
	-12%	-11%	-20%	-9%	-1%
MD	9,872	22,679	(16,564)	(14,135)	(1,852)
	-52%	-59%	-54%	-60%	-64%
NY	1,215	3,729	(1,384)	(3,381)	(179)
	-5%	-4%	7%	-7%	-18%
PA	17,489	56,394	(27,557)	(40,809)	(5,517)
	-7%	-8%	4%	-15%	0%
VA	33,932	85,823	(68,173)	(44,281)	(7,300)
	-23%	-18%	-17%	-20%	-28%
WV	1,646	5,200	(1,832)	(4,321)	(693)
	-4%	-8%	-8%	-9%	9%
Total	68,759	190,345	(120,404)	(121,016)	(17,690)

FCHT_ST	Impervious	Pervious	Natural	Agriculture	Mixed Open
DC	63	97	(161)	-	-
	-17%	-18%	-17%	0%	0%
DE	5,012	18,276	(4,127)	(16,749)	(2,413)
	-3%	-1%	-31%	8%	11%
MD	19,755	56,171	(29,174)	(40,177)	(6,575)
	-5%	2%	-18%	14%	28%
NY	1,298	4,112	(1,018)	(4,153)	(239)
	1%	6%	-21%	14%	9%
PA	18,668	64,326	(22,015)	(54,472)	(6,507)
	-1%	5%	-17%	13%	18%
VA	42,359	106,684	(67,334)	(68,890)	(12,819)
	-3%	2%	-18%	24%	26%
WV	1,783	5,763	(1,250)	(5,606)	(691)
	4%	2%	-37%	18%	9%
Total	88,939	255,429	(125,079)	(190,045)	(29,243)

Sewer and Septic Scenario Results- P6 Domain

HT	Septic_2013	Septic_2025	Pop13_Septic	Pop25_Septic	Pop13_Sewer	Pop25_Sewer
DC	195	208	405	432	648,760	786,684
DE	58,457	71,757	145,475	178,566	779,920	836,101
MD	396,659	457,215	1,026,294	1,161,718	4,904,835	5,196,097
NY	282,906	286,412	663,888	672,320	1,299,902	1,305,129
PA	642,664	703,581	1,533,073	1,684,515	3,699,097	3,882,654
VA	691,608	763,528	1,565,482	1,769,652	5,848,650	6,463,238
WV	113,220	120,818	254,987	274,593	138,386	147,639
Grand Total	2,185,709	2,403,520	5,189,605	5,741,798	17,319,550	18,617,540

CZ	Septic_2013	Septic_2025	Pop13_Septic	Pop25_Septic	Pop13_Sewer	Pop25_Sewer
DC	195	196	405	406	648,760	786,710
DE	58,457	69,866	145,475	173,831	779,920	840,836
MD	396,659	427,557	1,026,294	1,086,090	4,904,835	5,271,725
NY	282,906	286,361	663,888	672,200	1,299,902	1,305,249
PA	642,664	699,035	1,533,073	1,673,059	3,699,097	3,894,110
VA	691,608	757,643	1,565,482	1,752,007	5,848,650	6,480,883
WV	113,220	113,346	254,987	255,321	138,386	166,911
Grand Total	2,185,709	2,354,002	5,189,605	5,612,915	17,319,550	18,746,424

FC_HT2	Septic_2013	Septic_2025	Pop13_Septic	Pop25_Septic	Pop13_Sewer	Pop25_Sewer
DC	195	195	405	405	648,760	786,711
DE	58,457	72,018	145,475	179,229	779,920	835,438
MD	396,659	455,489	1,026,294	1,157,242	4,904,835	5,200,573
NY	282,906	286,412	663,888	672,311	1,299,902	1,305,138
PA	642,664	703,784	1,533,073	1,684,819	3,699,097	3,882,350
VA	691,608	762,725	1,565,482	1,767,032	5,848,650	6,465,859
WV	113,220	115,370	254,987	260,586	138,386	161,646
Grand Total	2,185,709	2,395,992	5,189,605	5,721,623	17,319,550	18,637,715

Options for Updating Phase 6 Land Use Database

1. Only update areas of change from 2013 – 2019.

Pros: Least expensive option.

Cons: Temporal imprecision and errors in 2013-ish land use/cover classification persist in 2018/19 dataset.

2. Remap watershed counties for 2018/2019 using NAIP and stereo imagery-derived Digital Surface Model. Update 2013 dataset based on change analysis.

Pros: Errors in 2013 dataset can be fixed. More flexibility to improve classification using spectral and surface elevation data in addition to contextual analyses and use of ancillary data.

Cons: More expensive and time consuming option.

3. Remap watershed counties for 2019 using specially acquired imagery and Digital Surface Model. Update 2013 dataset based on change analysis.

Pros: Higher quality imagery will improve class accuracy, temporal precision, and automation of product. Errors in 2013 dataset can be fixed. More flexibility to improve classification using spectral and surface elevation data in addition to contextual analyses and use of ancillary data.

Cons: Most expensive option.

Monitoring & Modeling Land Cover/Use Change

