



Proposed Revisions to Phase 6 “True-Up”

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CBP Land Use Workgroup Call
August 2, 2017

What's the “true-up”?

- Incorporating the Census of Agriculture, Construction, and Harvested Forest acreages into the mapped Phase 6 land uses.

Current “True-up” method:

Constrained Scenario: Census of Agriculture EXCEEDS mapped acres of agriculture.						
Modeling Segment	Mapped Land Use	Acres	Accuracy		Error Acres	New Acres
LRSEG #1	Impervious, Roads	30	94%		2	29
LRSEG #1	Impervious, Other	100	94%		6	97
LRSEG #1	Trees over Impervious	10	75%		3	9
LRSEG #1	Water	20	100%		0	20
LRSEG #1	Wetlands, Floodplain	100	95%		5	97
LRSEG #1	Wetlands, Other	150	95%		8	146
LRSEG #1	Forest	450	98%		9	445
LRSEG #1	Trees over Turf Grass	100	83%		17	91
LRSEG #1	Mixed Open	100	87%		13	93
LRSEG #1	Turf Grass	400	72%		112	341
LRSEG #1	Crops (Census)	750	80%		150	671
LRSEG #1	Pasture (Census)	850	80%		170	760
Total Land Use Acres		3060			494	2,800
Total LRSEG #1 Acres		2800				
Final Agricultural Acres						1,432

Problem with current “True-up” method:

“True-up” may produce illogical results due to the variable representation and proportions of land uses at the LRSEG scale. Illogical results may also be apparent through time.

Example: Anne Arundel County, MD

Census reports 1645 more crop acres and 400 less pasture acres than mapped land uses.

“True-up” adjusts 27,342 gross acres.

	Impervious	Pervious	Natural	Mixed	Crop	Pasture	Water
P6_TrueUp	47,216	53,704	115,940	16,086	11,976	7,903	5,086
Mapped	42,218	67,146	118,189	14,436	10,880	7,982	4,977
P6_vs_Map	4,998	-13,442	-2,249	1,650	1,096	-79	109

Results of New Method

	Impervious	Pervious	Natural	Mixed	Crop	Pasture	Water
P6_TrueUp	47,216	53,704	115,940	16,086	11,976	7,903	5,086
Mapped	42,218	67,146	118,189	14,436	10,880	7,982	4,977
P6_vs_Map	4,998	-13,442	-2,249	1,650	1,096	-79	109
Cnty_TrueUp	42,122	66,412	118,081	14,351	12,388	7,499	4,975
Cnty_vs_Map	-96	-734	-108	-85	1,508	-483	-2

The Fix

1. Perform initial true-up at county scale using current methodology
2. From the county scale true-up, allocate the estimated change in crop and pasture acres to LRSEGs based on the relative proportions of each County's crop and pasture within each County's LRSEG.
3. For each LRSEG:
 1. Calculate the acres of potential adjustment for all non-ag classes (class error rates * class acres)
 2. Calculate the relative proportions of potential adjustment for all non-ag classes.
 3. For each non-ag class, multiply their relative proportion of potential adjustment by the allocated change in crop and pasture and add the results to their mapped acres.
4. For LRSEGs in the Bay watershed, allocate animal acres from the county scale to LRSEGs based on their relative proportions of a County's total agriculture.
 1. Subtract 50% of animal acres from regulated and non-regulated Turf Grass (based on relative proportions of MTG to NTG) and 50% from regulated and non-regulated Impervious Non-Roads (based on relative proportions of MNR to NNR).
5. Subtract reported "construction" acres proportionately from all five developed land uses (IR, INR, TCI, TG, and TCT).
6. Subtract reported "harvest forest" acres from mapped "forest" acres.

The Fix (in VA)

Why's VA different?

Because they are the only state to explicitly map cropland and pasture with the aid of confidential NASS records and the only state to have assessed the accuracy of those classes.

1. Reconcile Ag Census crop and pasture/hay acres with mapped crop and pasture/hay acres:
 1. For each county, calculate the error acres for mapped crop and pasture and reported Ag Census crop and pasture (acres * 1 - accuracy rate)
 2. Calculate the ratios of the mapped to Ag Census crop and pasture error acres
 3. Multiply ratios by the differences in reported Ag Census cropland and pasture acres to mapped crop and pasture acres respectively.
 1. Add results to mapped cropland and pasture acres respectively.

Augusta, VA	Census	Map	Difference	Census Acc.	Map Acc.	Census Err	Map Err	Ratios	Adjust	Final
	A	B	C (A-B)	D	E	F (A*C)	G (B*D)	H (G/F)	I (C*H)	J (B+I)
Crop	35,373	36,236	-863	85%	95%	5,306	1,812	0.34	-295	35,941
Pas/Hay	176,154	132,284	43,870	85%	91%	26,423	11,906	0.45	19,767	152,051

Question to LUWG:

Concur with replacing current “true-up” methodology with proposed new one?

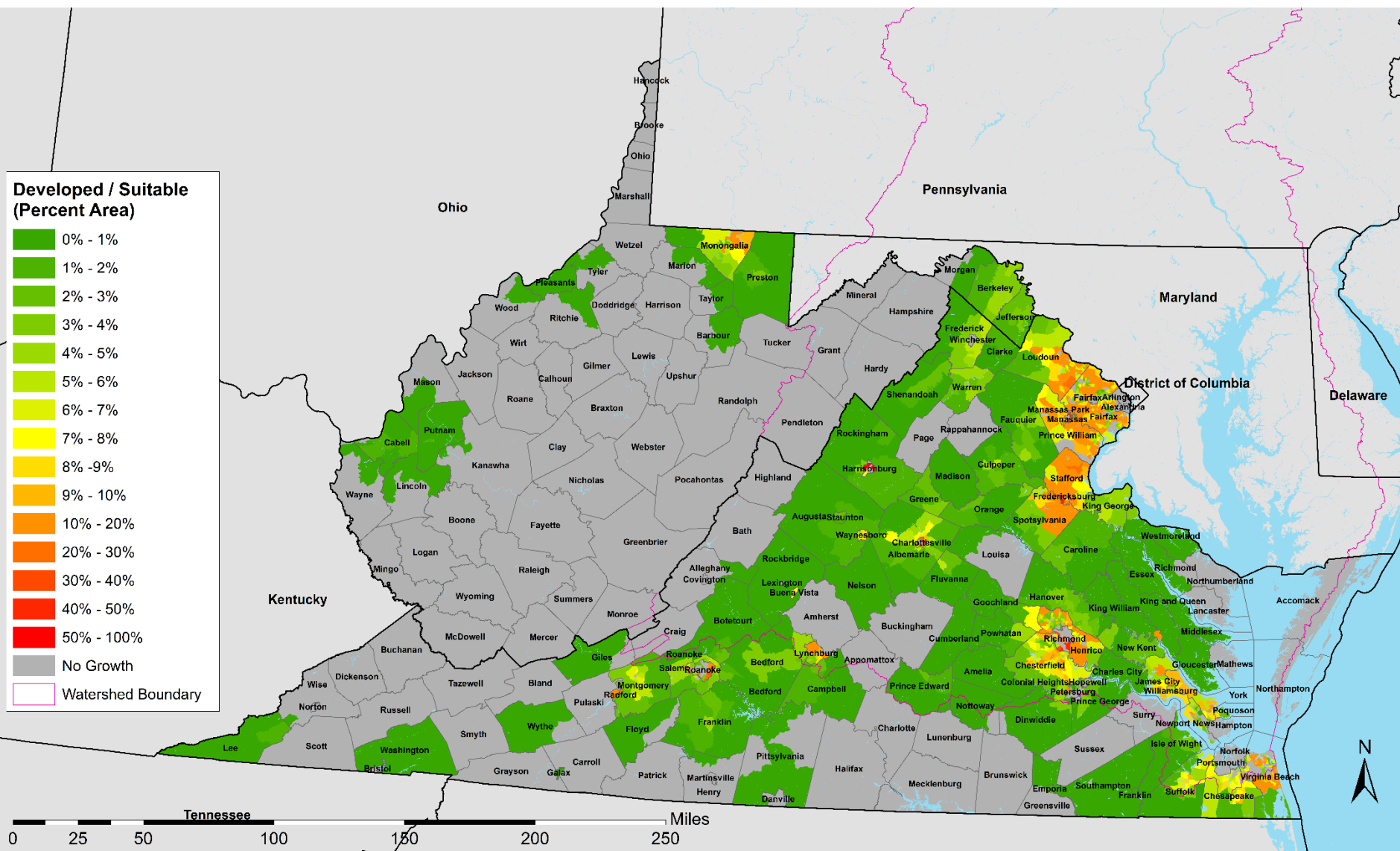
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Highlights

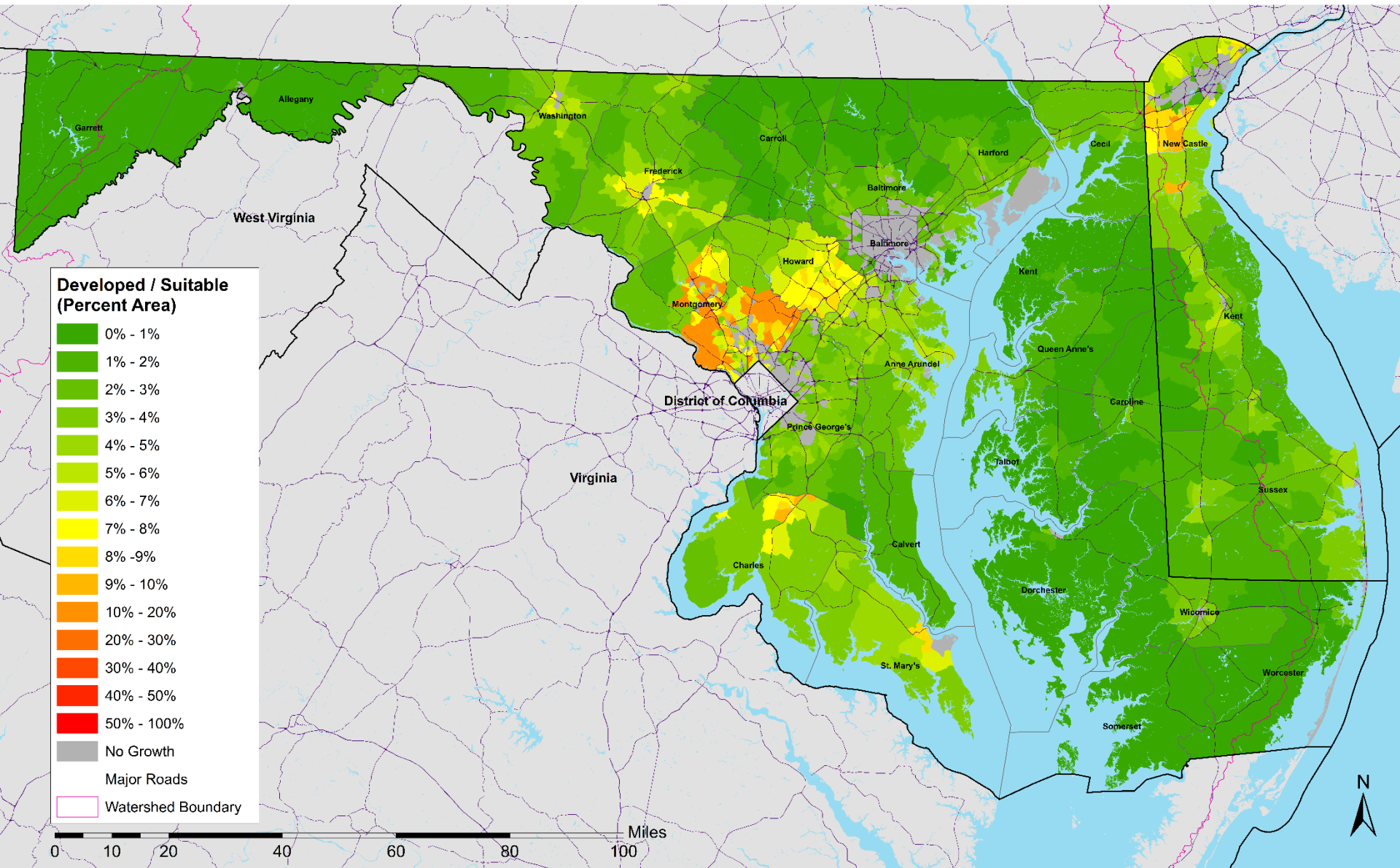
Purpose:

- **Refine Historic Trends scenario**
- **Identify alternative future scenarios**

New Development in Virginia and West Virginia (2030) as a Percentage of Land Suitable for Development

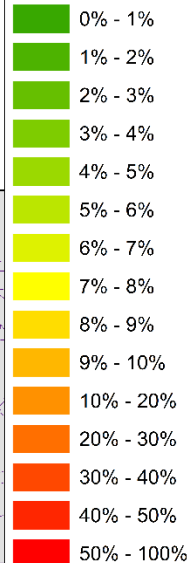


New Development in Maryland (2030) and Delaware (2040) as a Percentage of Land Suitable for Development

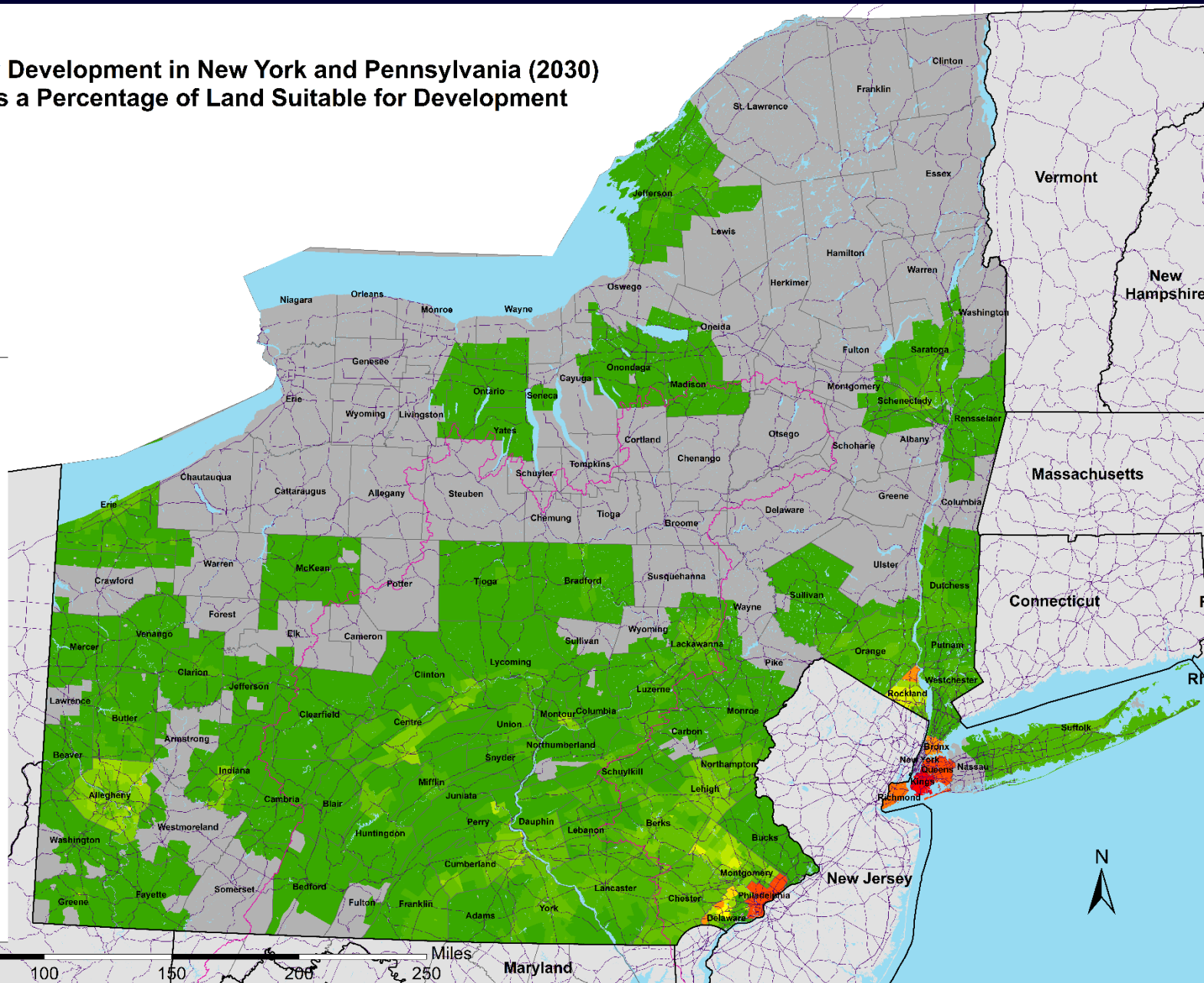


New Development in New York and Pennsylvania (2030) as a Percentage of Land Suitable for Development

Developed / Suitable (Percent Area)



No Growth
Watershed Boundary
Major Roads



Enhancements to Historic Trends

- District of Columbia simulated
- Refinement of density calculations (block scale)
- Establishment of minimum patch size = 1 / density
- Exclusion of Phase 6 impervious areas
- Addition of distance to Phase 6 and modeled sewer areas in regression
- Addition of historical change in impervious surfaces to serve as minimal amount of future growth expected
- Inclusion of housing units (not just households) in estimated demand

State	FIPS	Impervious Change		Development Change	
		2001-2013	1992-2001	2001-2013	1992-2001
DC	11	1,677	336	2,418	481
DE	10	17,745	12,559	54,347	37,835
MD	24	53,383	51,500	173,242	167,044
NY	36	20,849	8,847	62,067	25,934
PA	42	64,969	44,812	209,512	150,271
VA	51	128,145	100,509	385,455	304,349
WV	54	12,081	9,401	46,661	36,353

Simulated Growth 2013 – 2025

DC = 357 acres

DE = 39,043 acres

MD = 146,345 acres

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Highlights

Proposed Future Scenarios:

1. Utopia: Combination of scenarios #2 – #5, discussed below.
2. Current Policy and All Infrastructure: Current growth management policies and zoning combined with planned transportation and other infrastructure (e.g., sewer and water) improvements and constraints.
3. Conserving and Land and Preserving Rural Character scenarios: Up-zoning suburban/urban areas and down-zoning rural areas combined with aggressive land conservation, with the goal of maintaining natural resources and rural open space.
4. Infill and Redevelopment: Added incentives to promote infill and redevelopment.
5. Climate-Based: Restricting development in areas prone to sea-level rise and storm surge.

Proposed Phase 6 Future Scenarios

1. Historic Trends
2. Current Policy Lite (historic trends + zoning)
3. Current Policy Plus (current policy lite + infrastructure improvements (e.g., roads, sewer, water), soil restrictions, internet access, sea-level rise, and any policies (MD septic bill, Ag preservation Act) existing or intended that will shape future development)
4. Utopia (current policy plus + upzoning urban and downzoning rural areas and enhanced infill and redevelopment)