Proposed Change in Land Use True-Up Method for Forecast Period 2013 - 2025

Peter Claggett, USGS, CBP Land Use Workgroup Coordinator

Calibration True-Up Method

1. Forecast urban growth and corresponding changes in forest and agriculture (using CBLCM).

2. Forecast agricultural change (extrapolating trends in Census of Agriculture).

3. Reconcile the above two land use estimates for 2025 by allowing all land uses to adjust in proportion to their relative mapping/reporting errors.

Proposed Forecast True-Up Method

1. Forecast urban growth and corresponding changes in forest and agriculture (using CBLCM).

2. Forecast agricultural change (extrapolating trends in Census of Agriculture).

3. Reconcile the above two land use estimates for 2025 by allowing only changes to open space to accommodate extrapolated changes in agriculture.

Calibration True-Up Rationale

1. Allows land use acres to adjust based on their relative errors focuses adjustments on the least accurate land uses and datasets.
2. Historic land use trends are grounded in reality by being interpolated between maps and surveys for multiple years* between 1984 – 2013.
3. Minimizes the magnitude of adjustments to any individual land use by distributing changes across all land uses. Developed, forest, and agricultural land uses were only changed 1-2% on average from their original values.

*Mapped and Surveyed Data

- Chesapeake Bay Land Cover Data Series: 1984, 1992, 2001, 2006, 2011.
- High-resolution Land Use: 2013
- Census of Agriculture: 1982, 1987, 1992, 1997, 2002, 2007, 2012
- Census of Population and Housing: 1990, 2000, 2010, 2013 (ACS)

Forecast True-Up Rationale

1. 2025 land uses are produced relative to 2013 conditions which have already been adjusted for mapping/ reporting errors.
2. Preserves the integrity of the intensively reviewed* developed land use forecast relative to the linearly extrapolated trends from the Census of Agriculture.
3. Eliminates illogical transitions:
   - agriculture to forest in 9-12 years in New York;
   - agriculture to turf grass independent of urbanization;
   - changes in open water due to farmland retirement.

*Developed Land Forecast Review

- Reviewed by LUWG, USWG, FWG and state and county agencies from August – December 2017.
- Model has been peer-reviewed in the scientific literature and accepted for publication (with minor revisions).

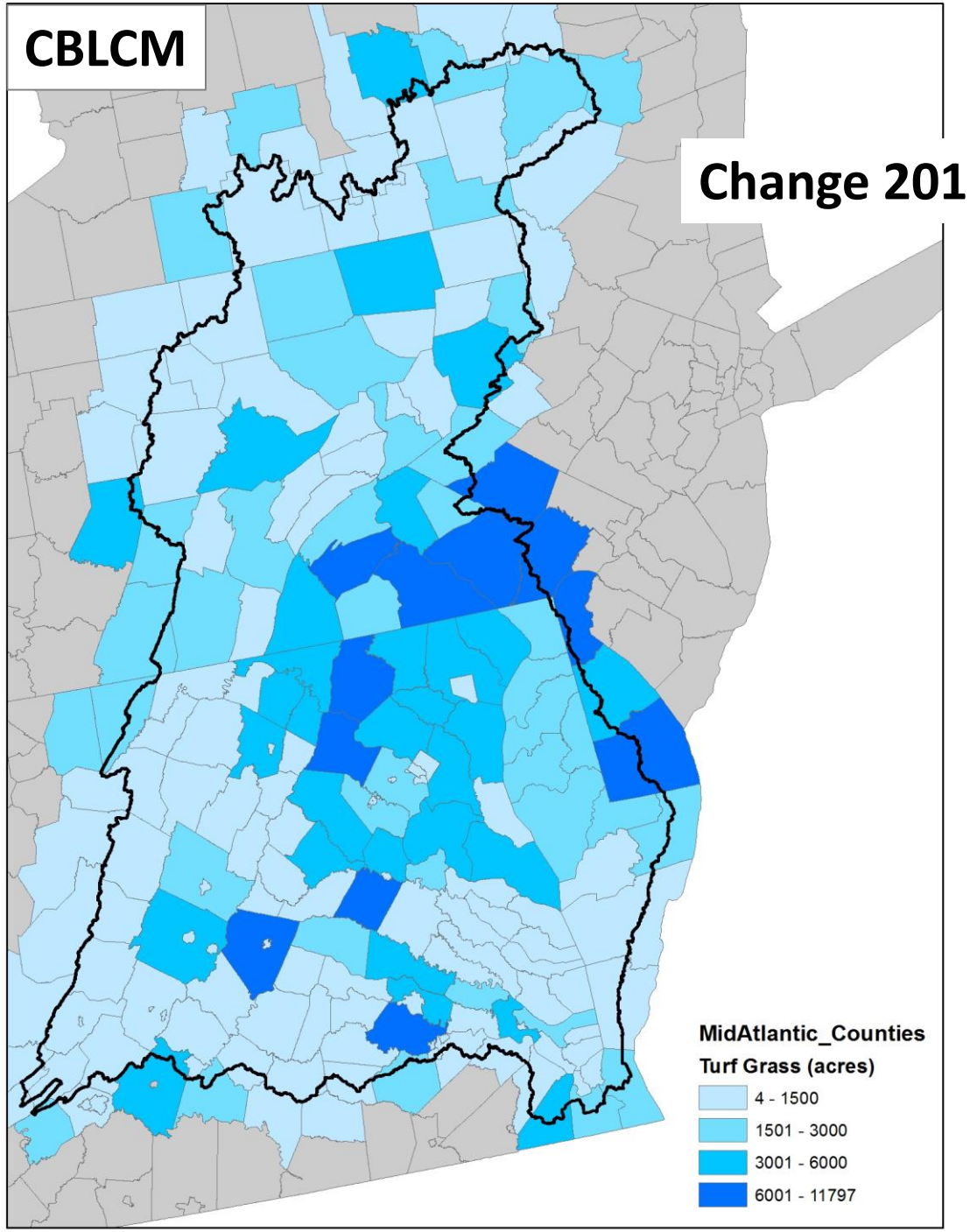
Phase 6 2025 Land Use, Post-True Up

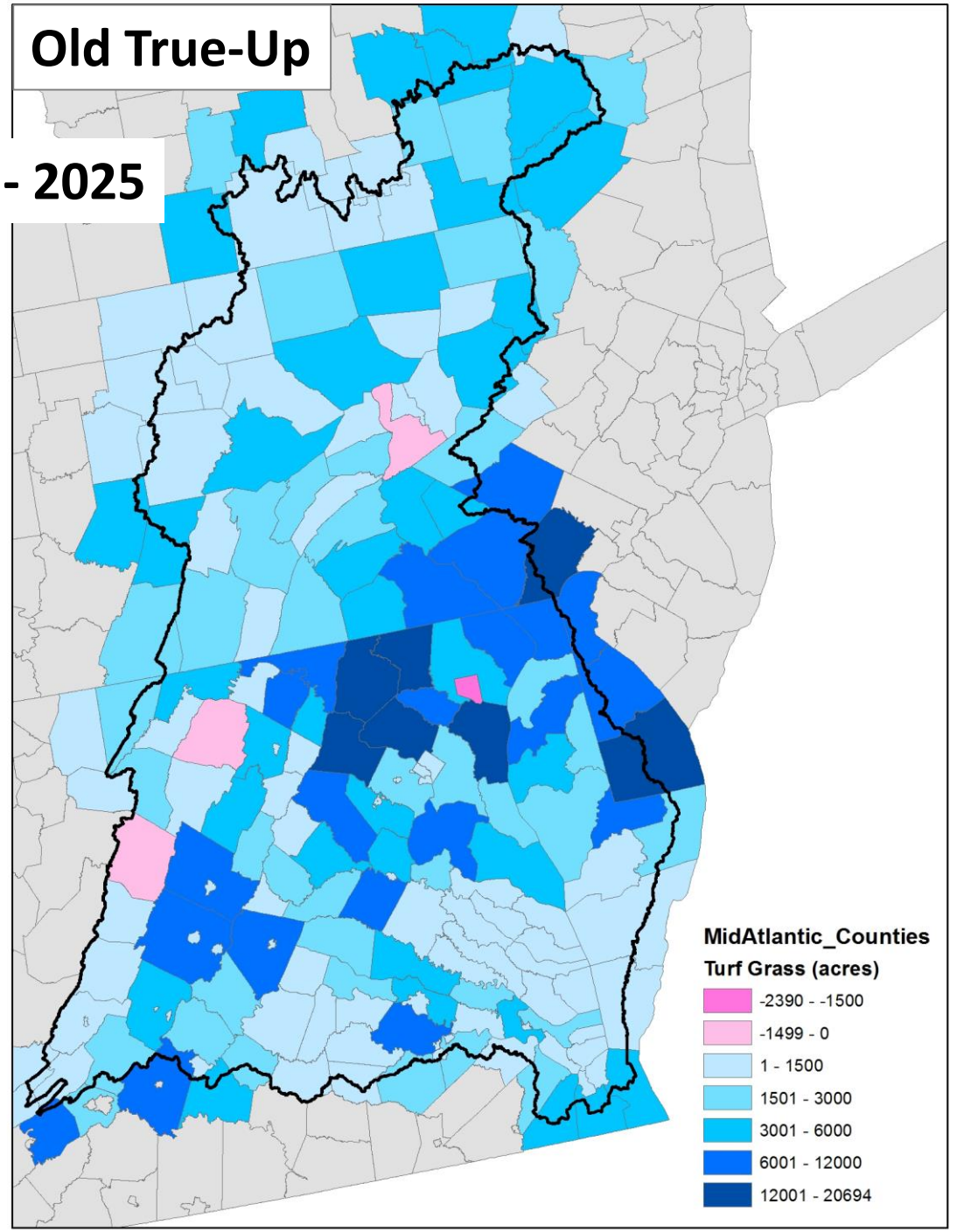
Jurisdiction	Impervious	Turf Grass	Forest	Agriculture	Open Space
Delaware	6,270	29,983	-4,640	-26,949	-3,618
District of Columbia	223	201	-193	0	0
Maryland	24,719	166,033	-43,026	-172,845	13,502
New York	7,949	16,857	65,690	-132,646	41,330
Pennsylvania	43,096	90,857	-15,882	-168,979	52,339
Virginia	45,001	157,181	-83,539	-138,820	11,421
West Virginia	11,917	14,323	-7,392	-17,190	2,964

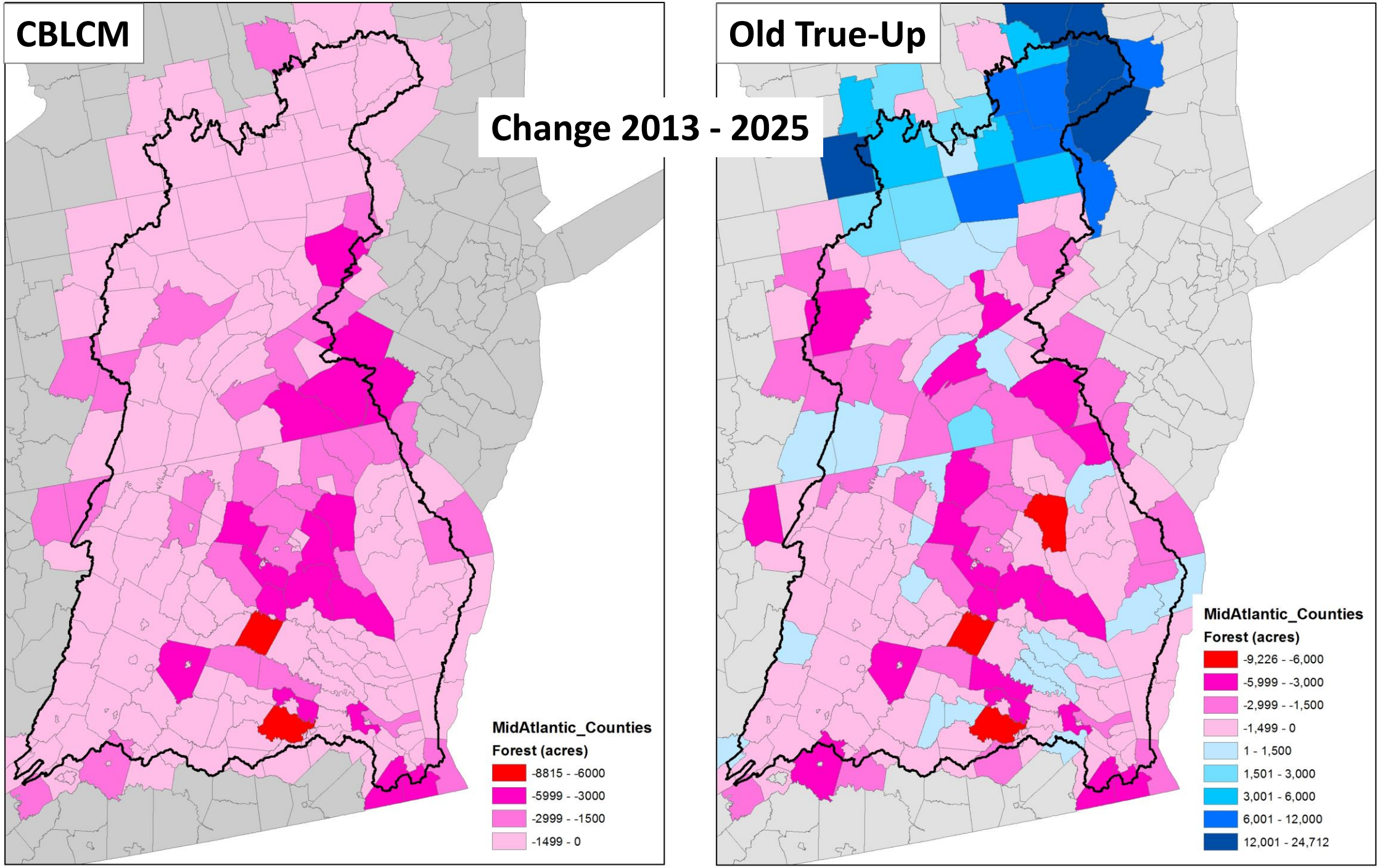
Phase 6 2025 Land Use, CBLCM

Jurisdiction	Impervious	Turf Grass	Forest	Agriculture	Open Space
Delaware	5,527	22,763	-4,556	-20,408	-3,326
District of Columbia	65	129	-194	0	0
Maryland	23,611	72,910	-39,970	-50,617	-5,933
New York	8,655	24,368	-12,918	-19,216	-890
Pennsylvania	34,091	100,927	-51,020	-75,448	-8,550
Virginia	49,917	132,313	-100,826	-72,403	-9,001
West Virginia	4,080	13,935	-7,106	-9,966	-944

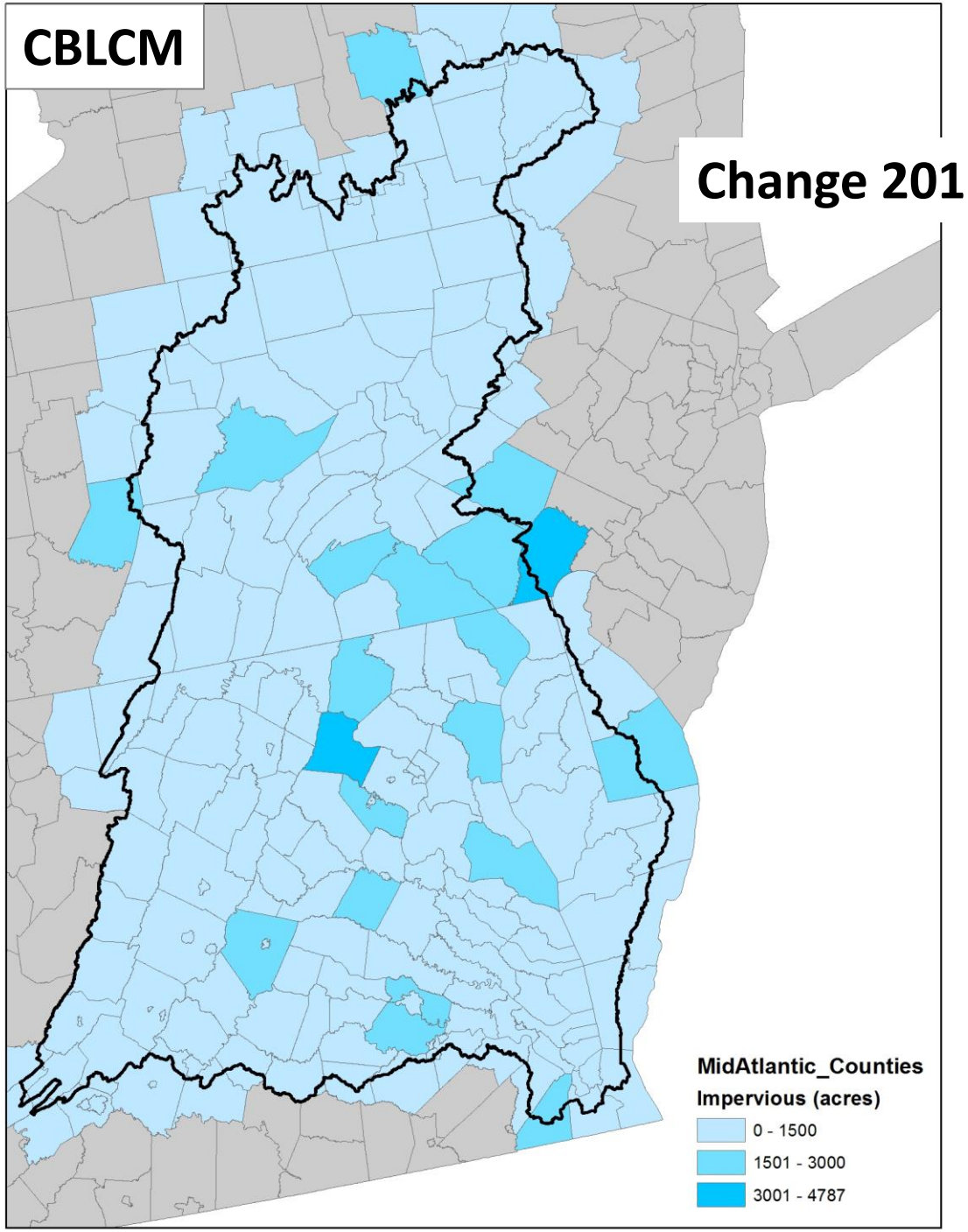
Change 2013 - 2025

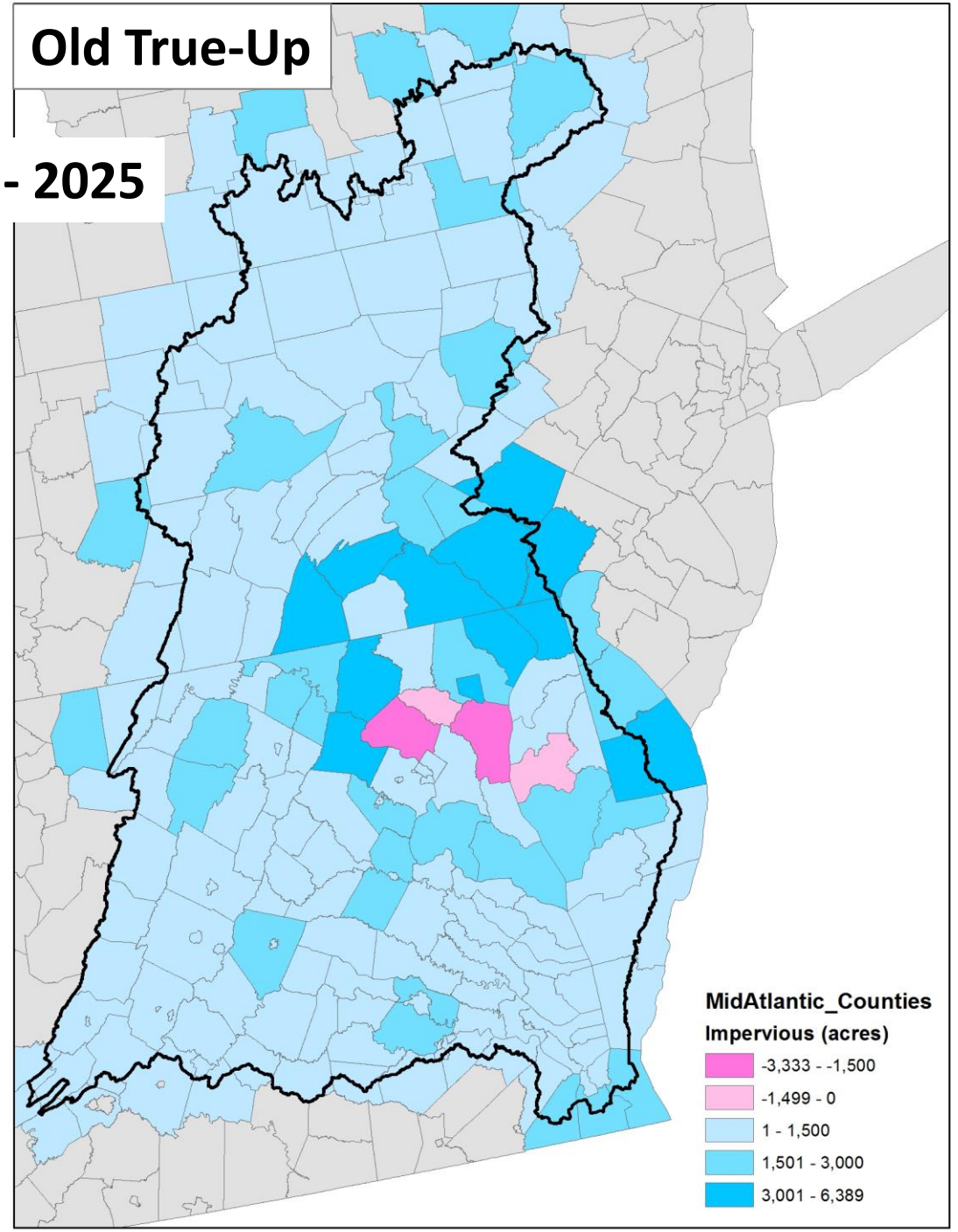





CBLCM
Change 2013 - 2025
Old True-Up
MidAtlantic_Counties
Forest (acres)
-8815 - -6000
-5999 - -3000
-2999 - -1500
-1499 - 0
MidAtlantic_Counties
Forest (acres)
-9,226 - -6,000
-5,999 - -3,000
-2,999 - -1,500
-1,499 - 0
1 - 1,500
1,501 - 3,000
3,001 - 6,000
6,001 - 12,000
12,001 - 24,712

Change 2013 - 2025





“Conservation Plus” Family of Scenarios: 2025

The “Conservation Plus” family of scenarios represents a variety of land conservation, land use planning, and policy actions that will directly or indirectly affect future patterns of development.

Three themes emerged from the list of plausible actions that are of interest to CBP jurisdictions and can be simulated consistently throughout the Chesapeake Bay watershed:

1. Forest Conservation
2. Growth Management
3. Agriculture and Soil Conservation

Scenario Specifications

1. **Forest Conservation (FC) scenario (1st Priority)**
   - Conserve riparian zones (100-ft)
   - Conserve wetlands (NWI, State Designated Wetlands, and Potential Conservable Wetlands(PA only))
   - Conserve areas subject to a 1m-rise in sea levels by 2100 and within 1-mile of National Wildlife Refuges
   - Conserve large forest tracts (250+ acres)
   - Conserve shoreline forests (all contiguous tracts within 1000-ft of the shoreline)
   - Conserve all high-value conservation lands identified by the Chesapeake Conservation Partnership

2. **Growth Management (GM) scenario (2nd Priority)**
   - Increase percent of infill/redevelopment by 10% per decade
   - Increase urban densities by 10% per decade
   - Increase proportion of urban vs rural growth by 10% per decade
   - Expand sewer service areas by 1-mile per decade
   - Avoid growth on soils unsuitable for septic systems

3. **Agriculture and Soil Conservation (ASC) scenario (3rd Priority)**
   - Conserve all designated Agricultural Districts and areas zoned rural agricultural
   - Conserve 100-year floodplain and frequently-flooded soils
   - Conserve prime farmlands and farmland of state importance
   - Conserve potential restorable wetlands (PA only)

Land Use Scenario Timeline

Dec. 20th: Complete all edits* to the “Current Zoning” scenario and begin CBLCM runs.

Dec. 29th: Complete CBLCM runs and post-processing of “Current Zoning” scenario.

Jan. 3rd: Land Use Workgroup Call: 10:00am – 12:00pm

Jan. 5th: Deliver “Current Zoning” scenario to CBP modeling team (into CAST the following week); Complete CBLCM runs of “Forest Conservation” scenario.

Jan. 15th: Deliver “Forest Conservation” scenario to CBP modeling team (into CAST by March 31st)

Jan. – March: Produce and deliver “Growth Management”, “Agriculture and Soil Conservation”, and selected additional scenarios to CBP modeling team.

March 31st: Input all scenarios into CAST.

* Edits include avoiding growth in the FEMA floodway, zoning and sewer service area edits, refining septic counts and other requested changes.