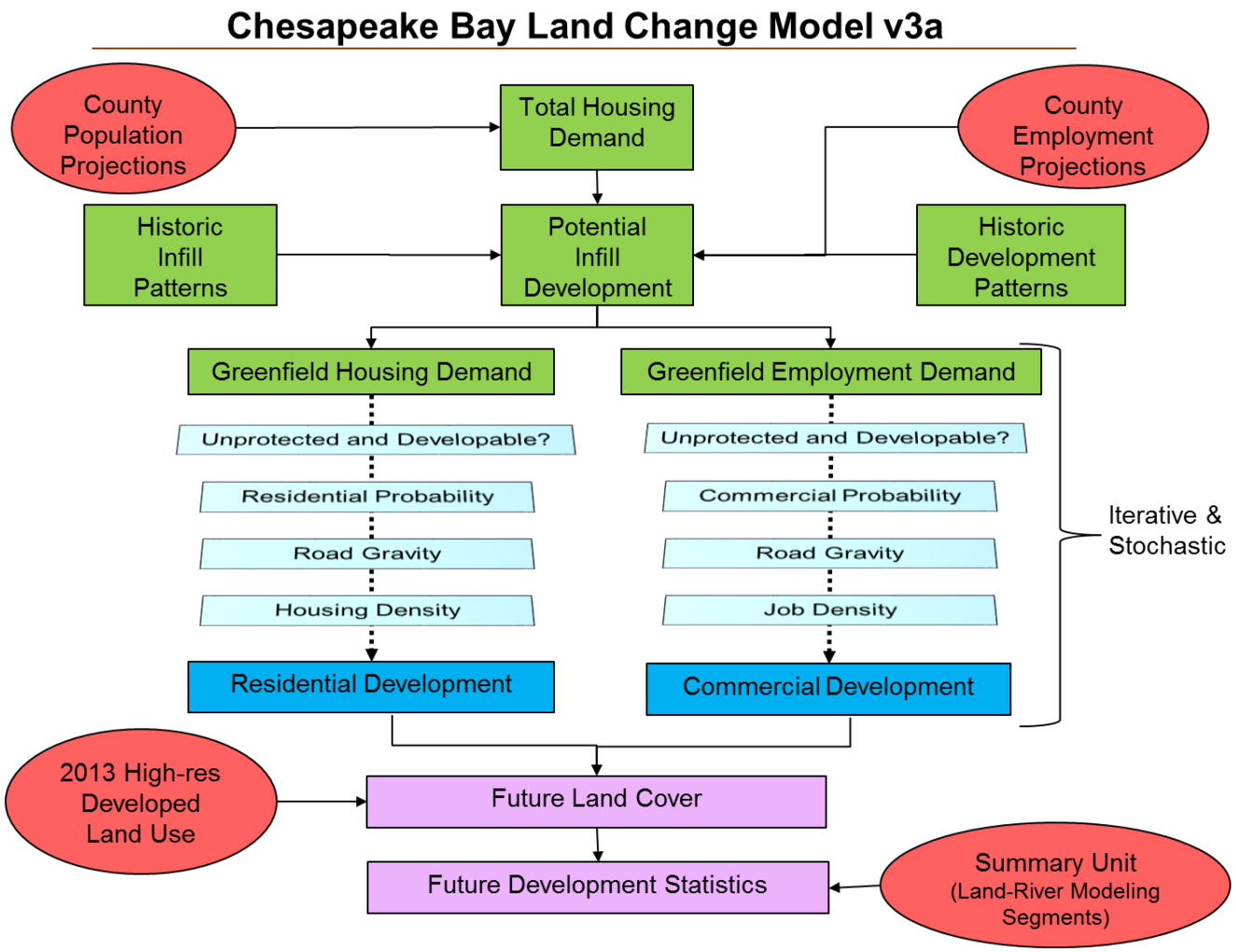
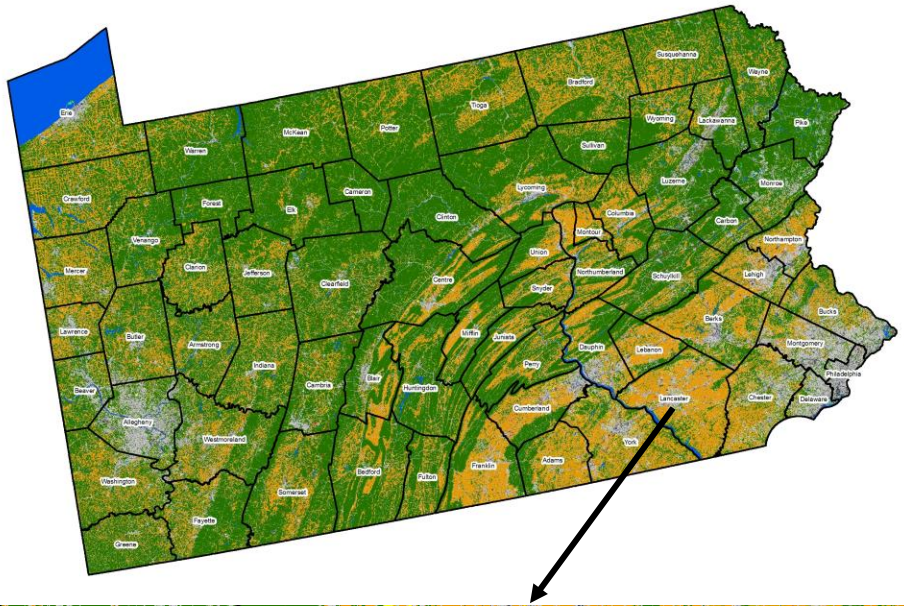
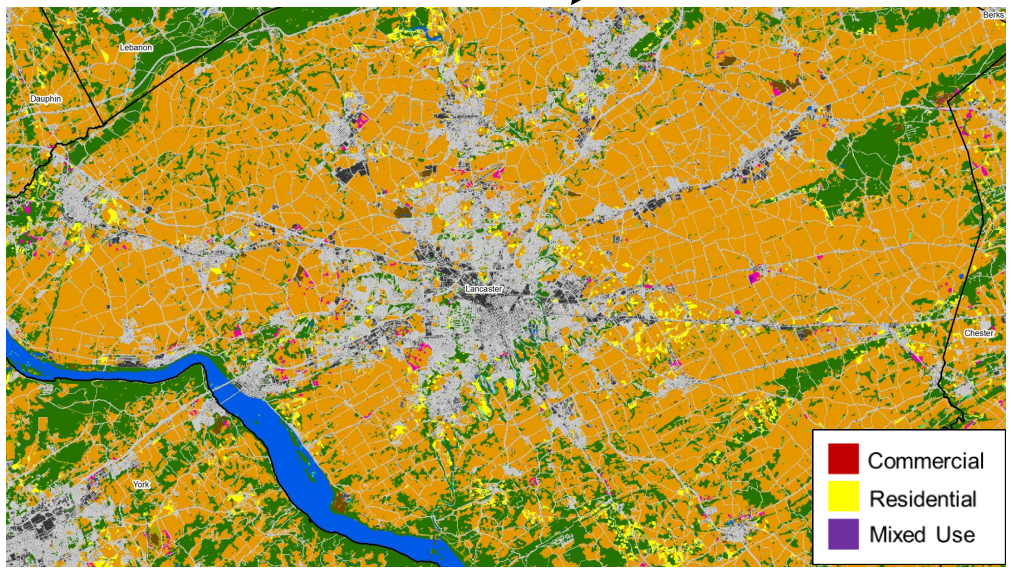
Estimated Changes in Land Use and Loads Through 2025

Peter Claggett, USGS, CBP Land Use Workgroup Coordinator

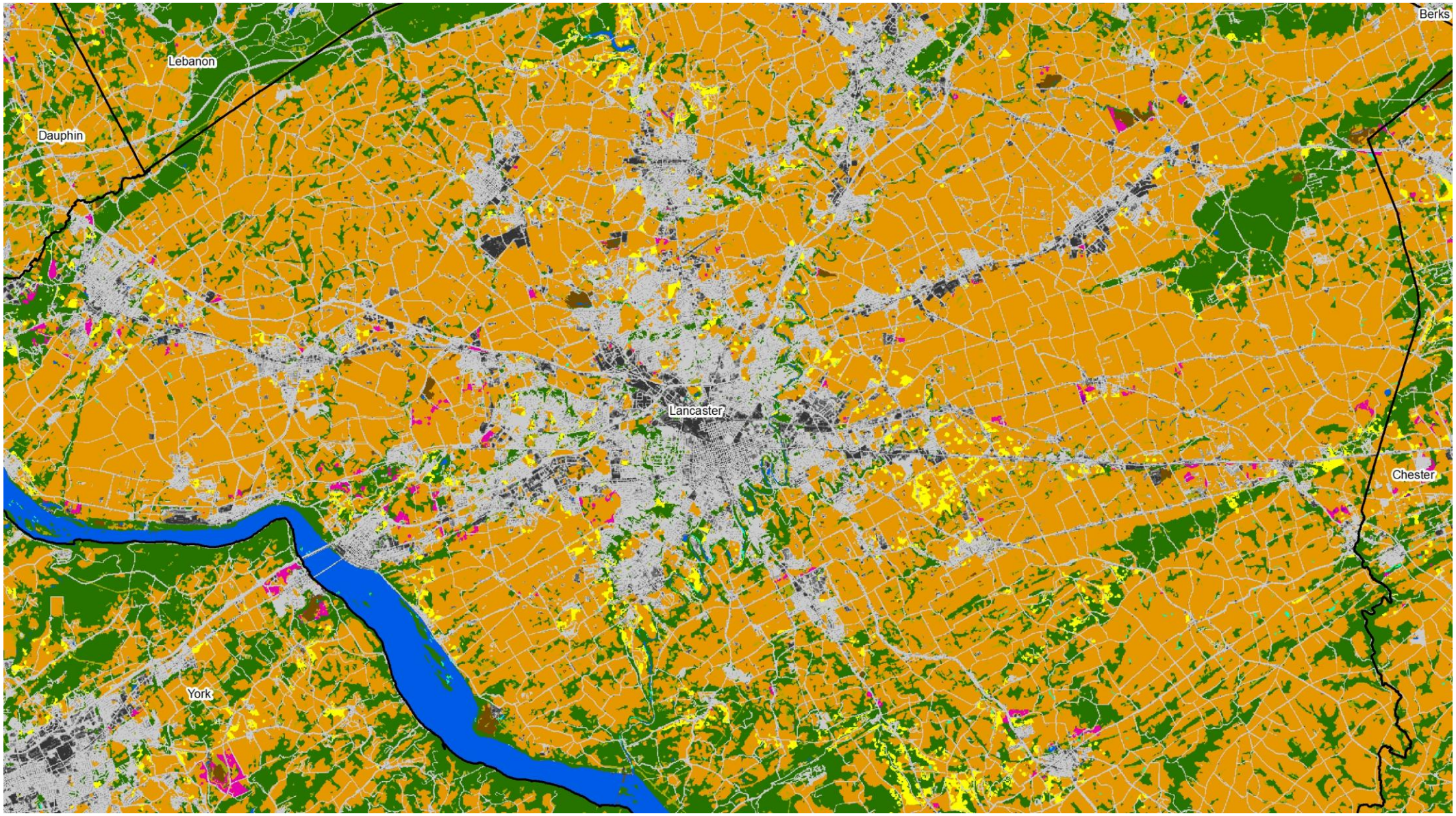
Partnership's Chesapeake Bay Land Change Model



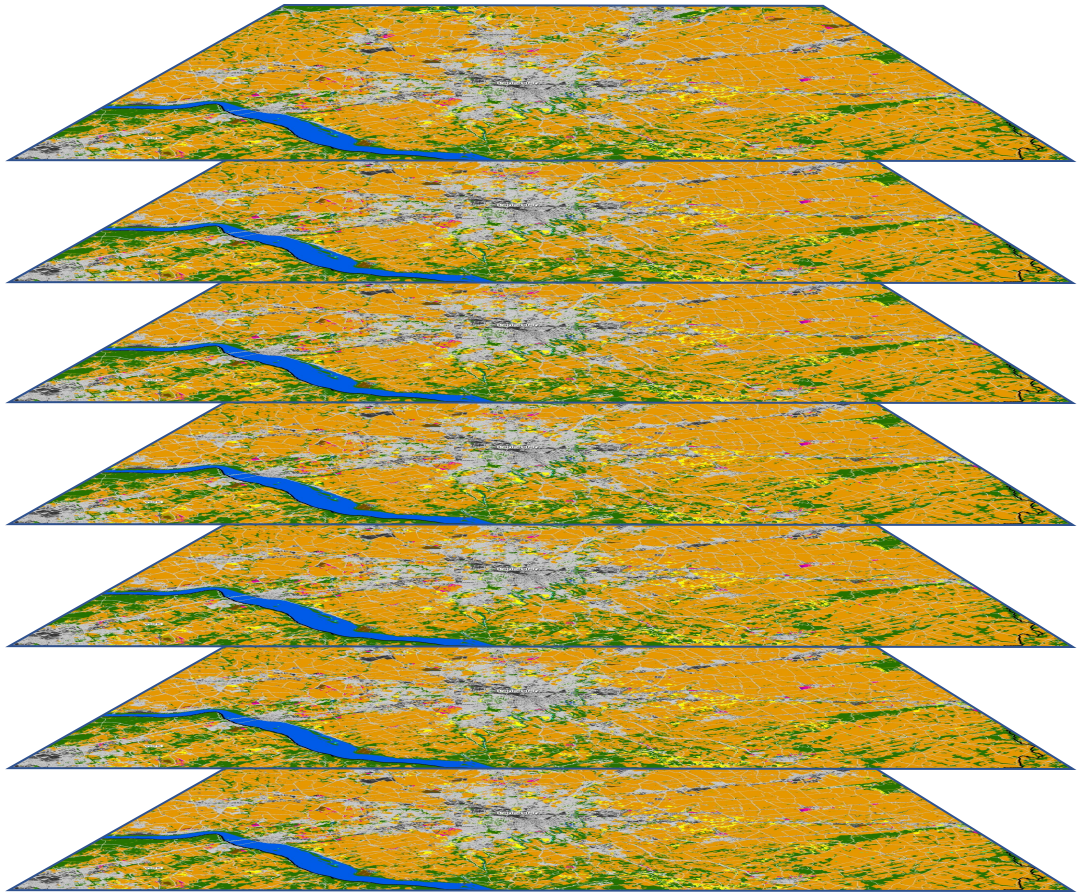




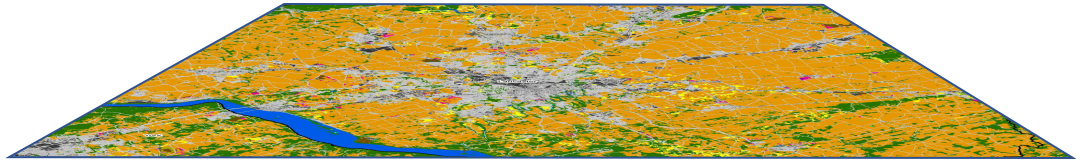
Assessing Uncertainty at Local Scales



Assessing Uncertainty at Local Scales



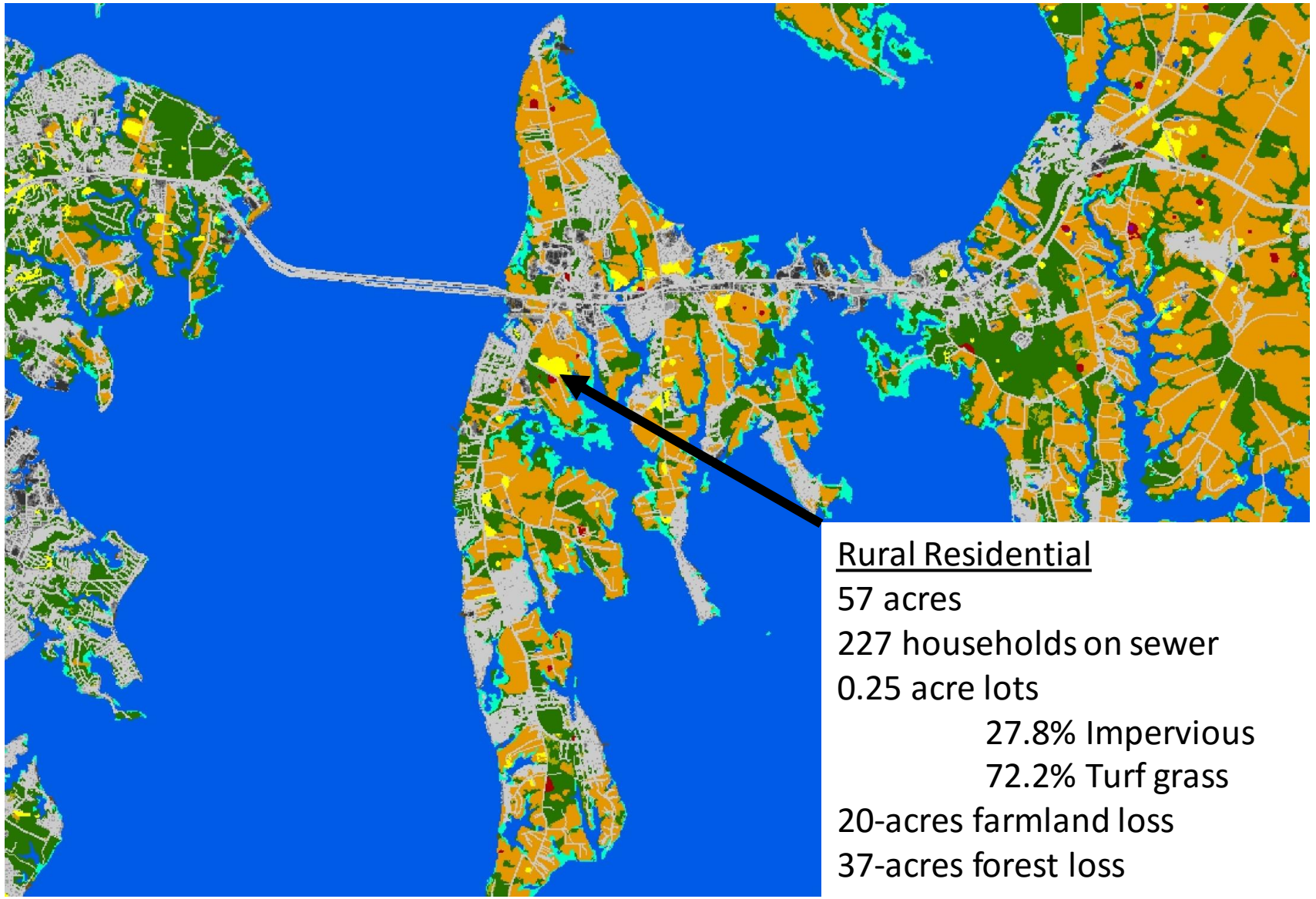
Every county is simulated 101 times for each scenario and target year, i.e., 2025.



Average of 101 simulations used to estimate amount of future residential and commercial development in 2025 by land-river segment.

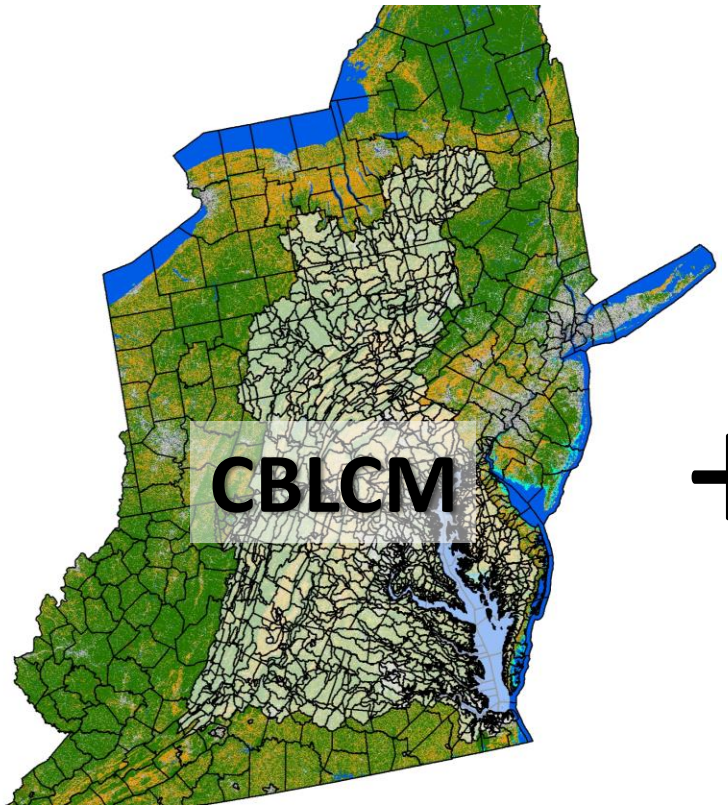
Land Change Model Outputs

- Impervious surface and turf grass expansion
- Forest conversion to development
- Farmland conversion to development
- Future population on sewer and septic



<u>Rural Residential</u>
57 acres
227 households on sewer
0.25 acre lots
27.8% Impervious
72.2% Turf grass
20-acres farmland loss
37-acres forest loss

Year 2025 Land Use



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Reported County-level Construction Acres

Extrapolated CENSUS OF AGRICULTURE

True-Up Process

Phase 6 2025 Land Use Dataset

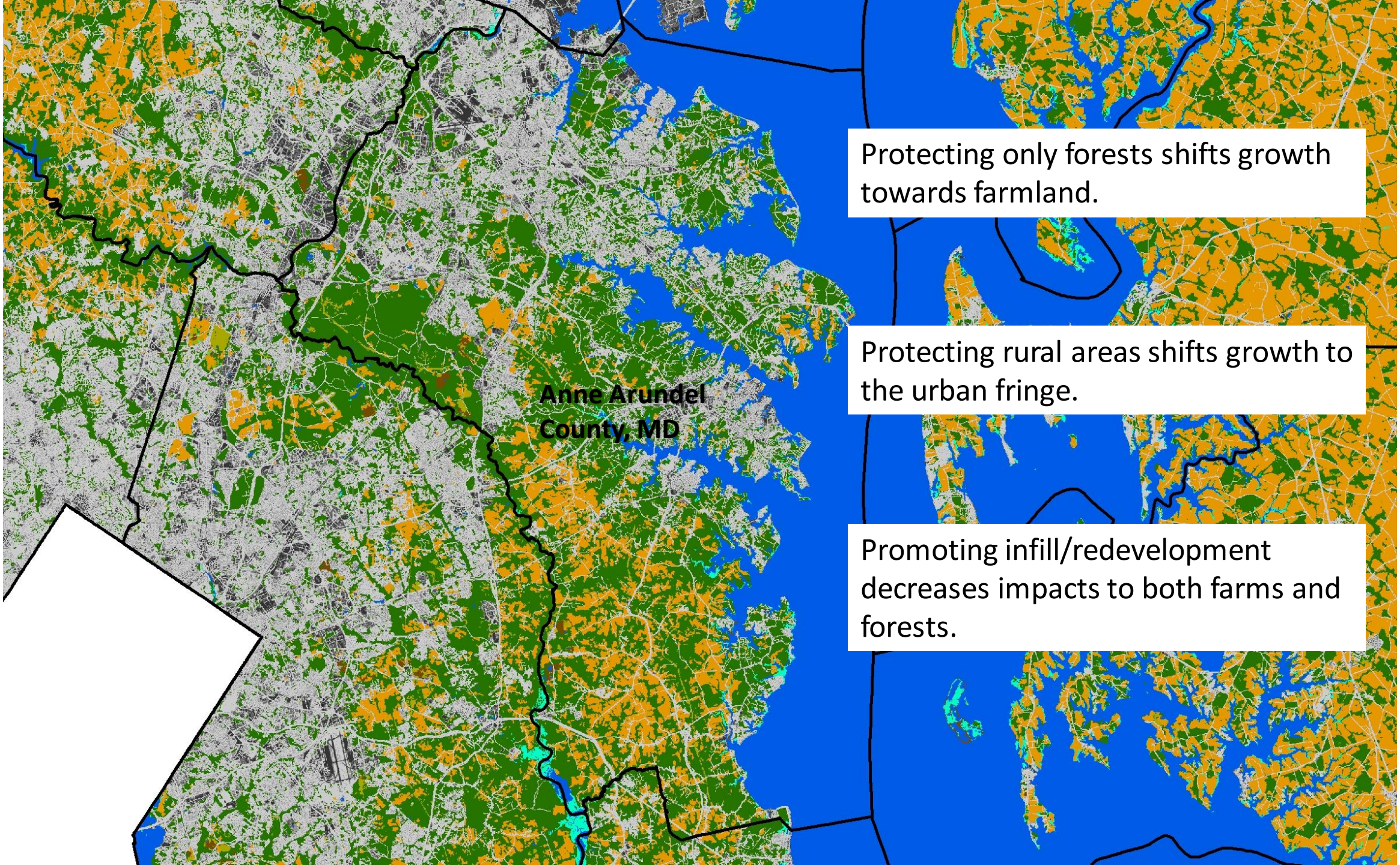
Future Growth Scenarios: 2025

Current Zoning Scenario: 2025 Baseline for Phase III WIPs

- continuation of historic trends constrained by existing local zoning. Includes the best available regional and local data representing current conditions

Conservation Plus Scenario: Package of Planning & Conservation "BMP's"

- Protect 100-year floodplain and frequently-flooded soils
- Protect riparian zones (35-ft, 100-ft, 300-ft)
- Protect large forest tracts (250+ acres, 1000+ acres) or green infrastructure
- Protect shoreline forests (all contiguous tracts 1000-ft from shoreline)
- Adjusting demand script:
  - Increase percent of infill/redevelopment (e.g., 5%, 10%, 15%)
  - Increase proportion of urban vs rural growth (e.g., 5%, 10%, 15%)
- Protect Agricultural Districts
- Avoid growth on soils unsuitable for septic systems
- Expand sewer service areas layer (e.g., 1-mile buffer, 2-mile buffer)
- Avoid growth in areas subject to category 3 Hurricane storm surge
- Protect highly productive farms, prime farmlands, farmland of state importance
- Protect state-designated "Healthy watersheds"
- Protect areas subject to marsh migration (e.g., upland buffer around tidal wetlands and National Wildlife refuges)



Protecting only forests shifts growth towards farmland.

Protecting rural areas shifts growth to the urban fringe.

Promoting infill/redevelopment decreases impacts to both farms and forests.

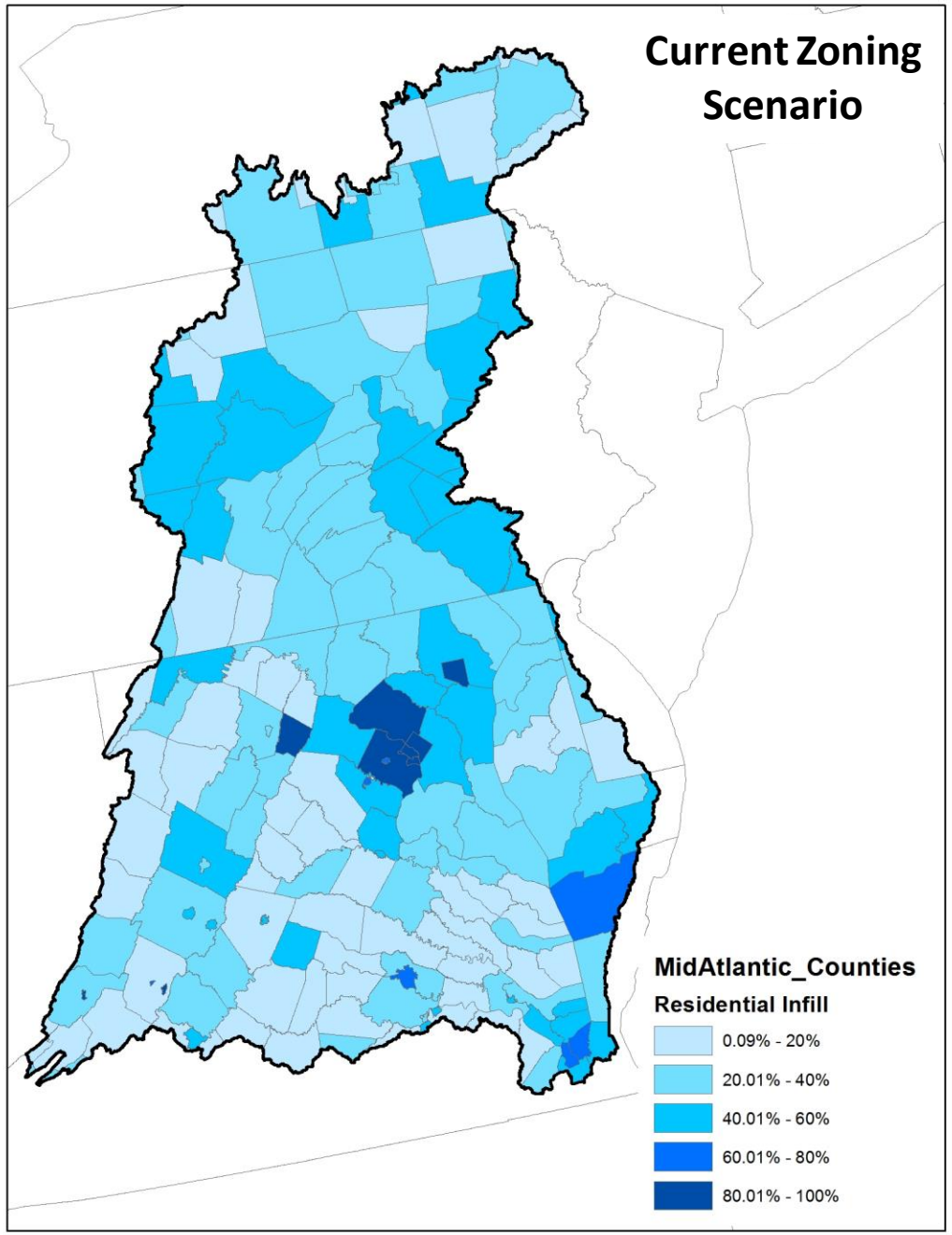
Land Use Planning and Conservation in CAST

- Loading impacts from individual or combinations of components of the Conservation Plus scenario will be evaluated with the Partnership models to quantify the water quality benefits of each particular action or collection of actions.

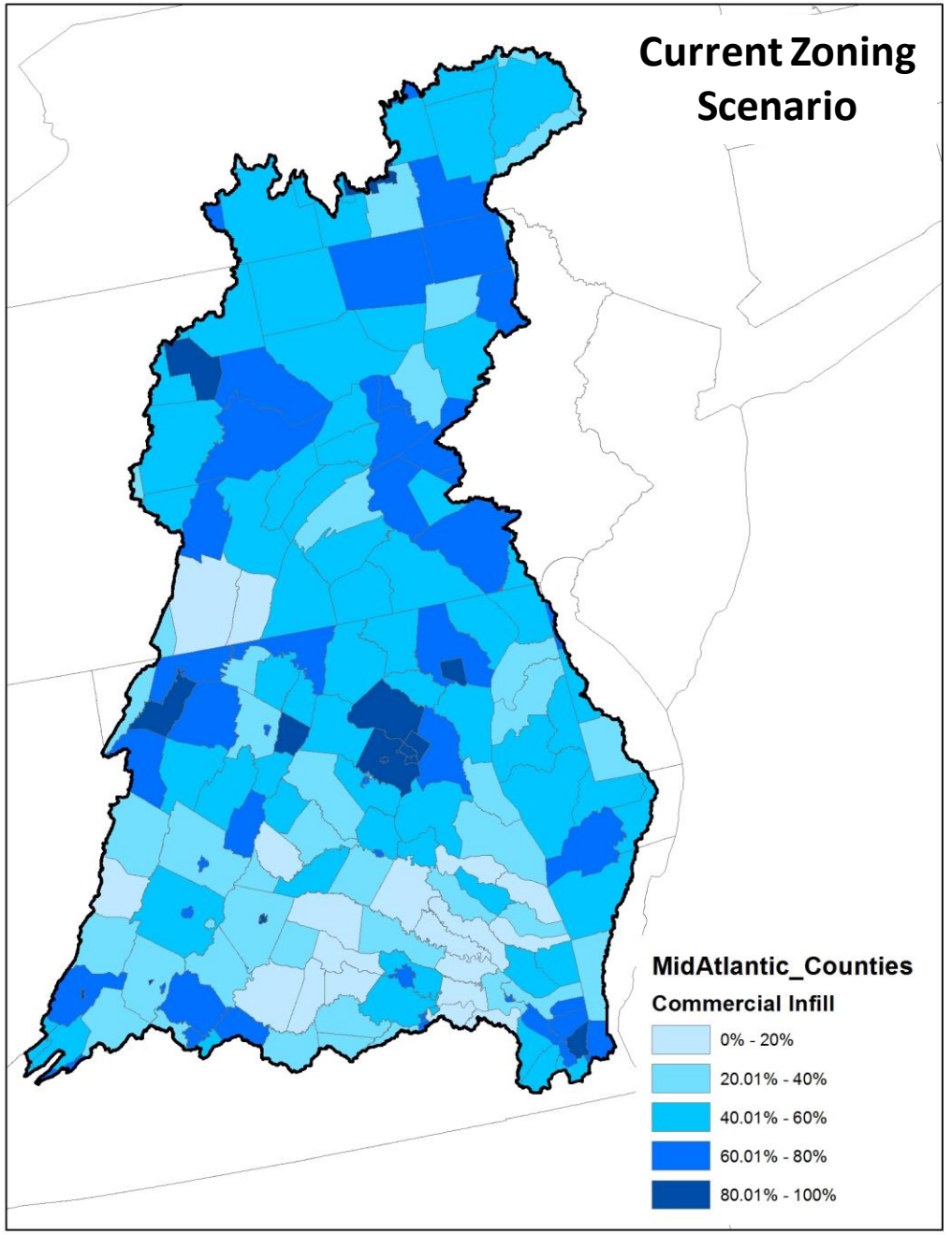
- Users of CAST will be able to select a subset of policy and conservation actions as components of their WIPs. To inform their selection, supplementary information will be provided about the potential local loading effects of policy and conservation actions.

- Planning and conservation actions will be simulated as changes in land use against which, CAST users can add other BMPs and estimate loads.

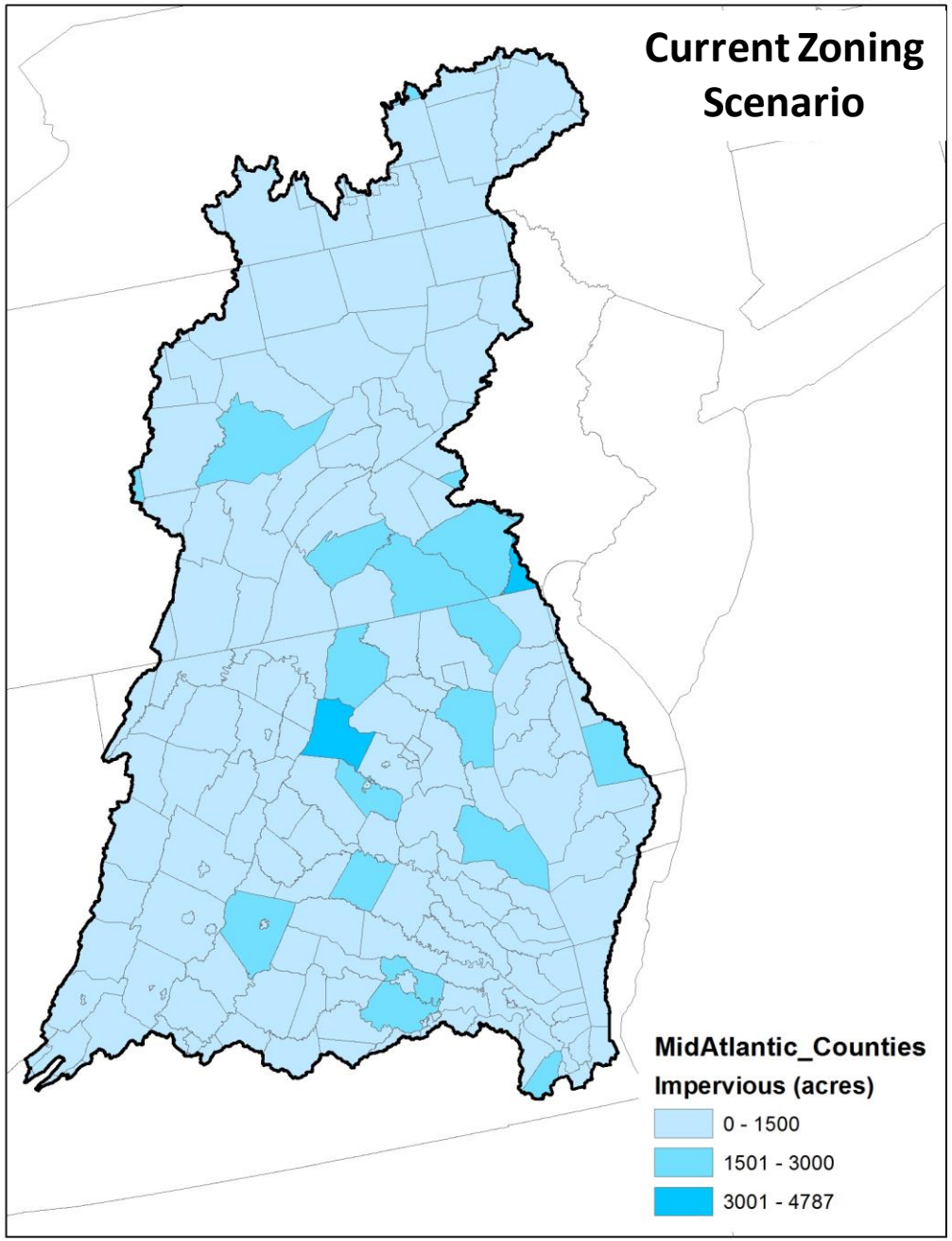
Residential Infill/Redevelopment



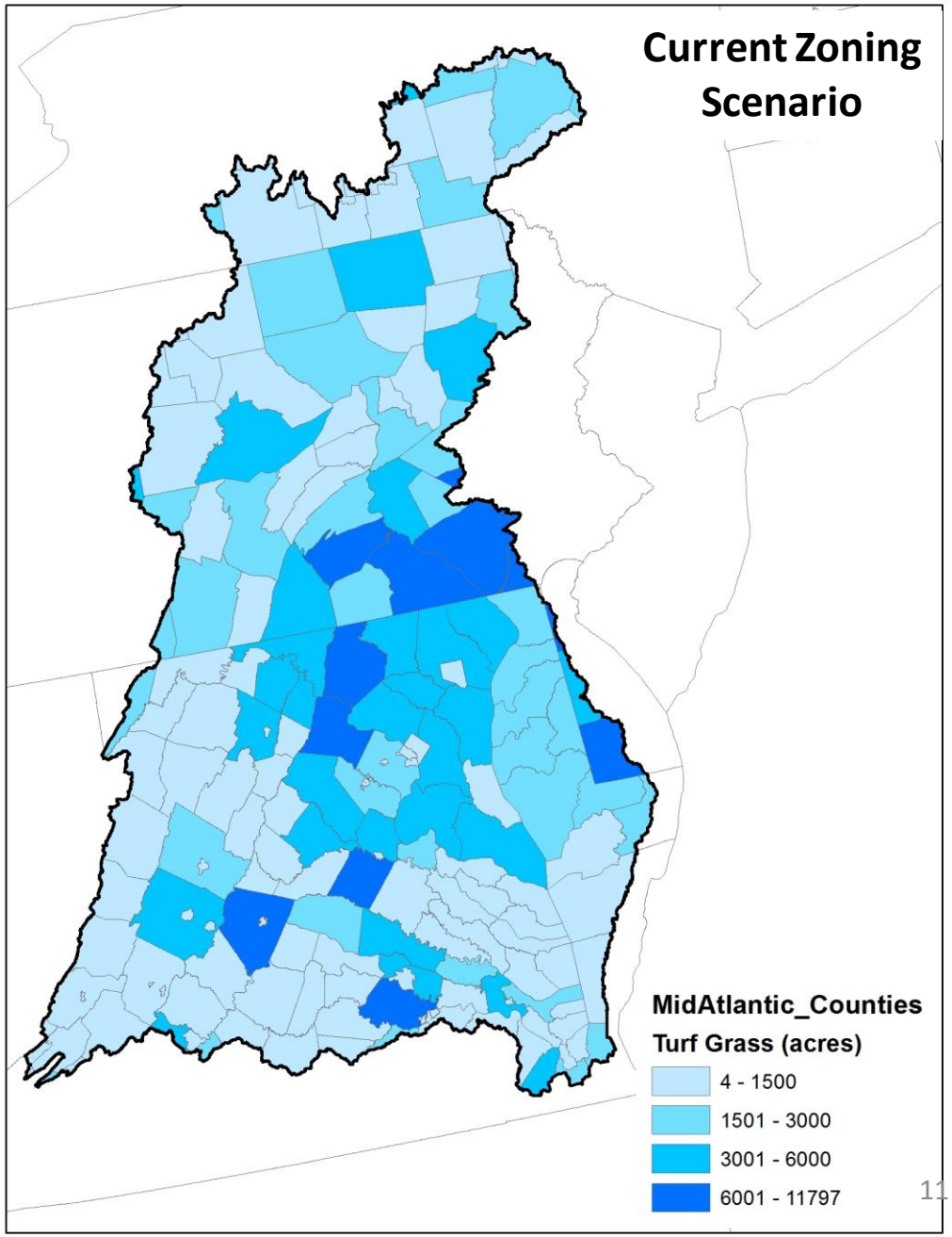
Commercial Infill/Redevelopment



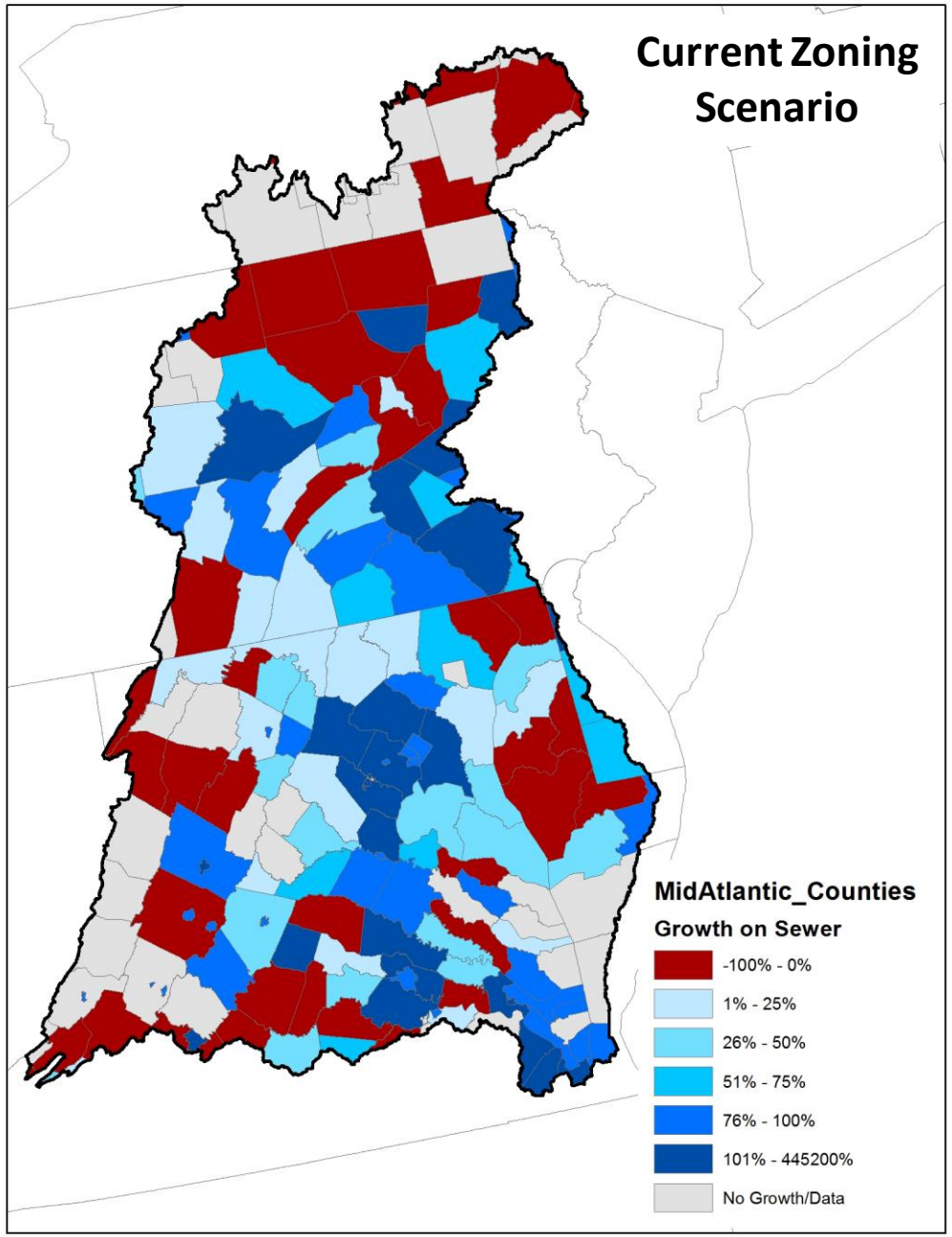
Increase in Impervious Surfaces

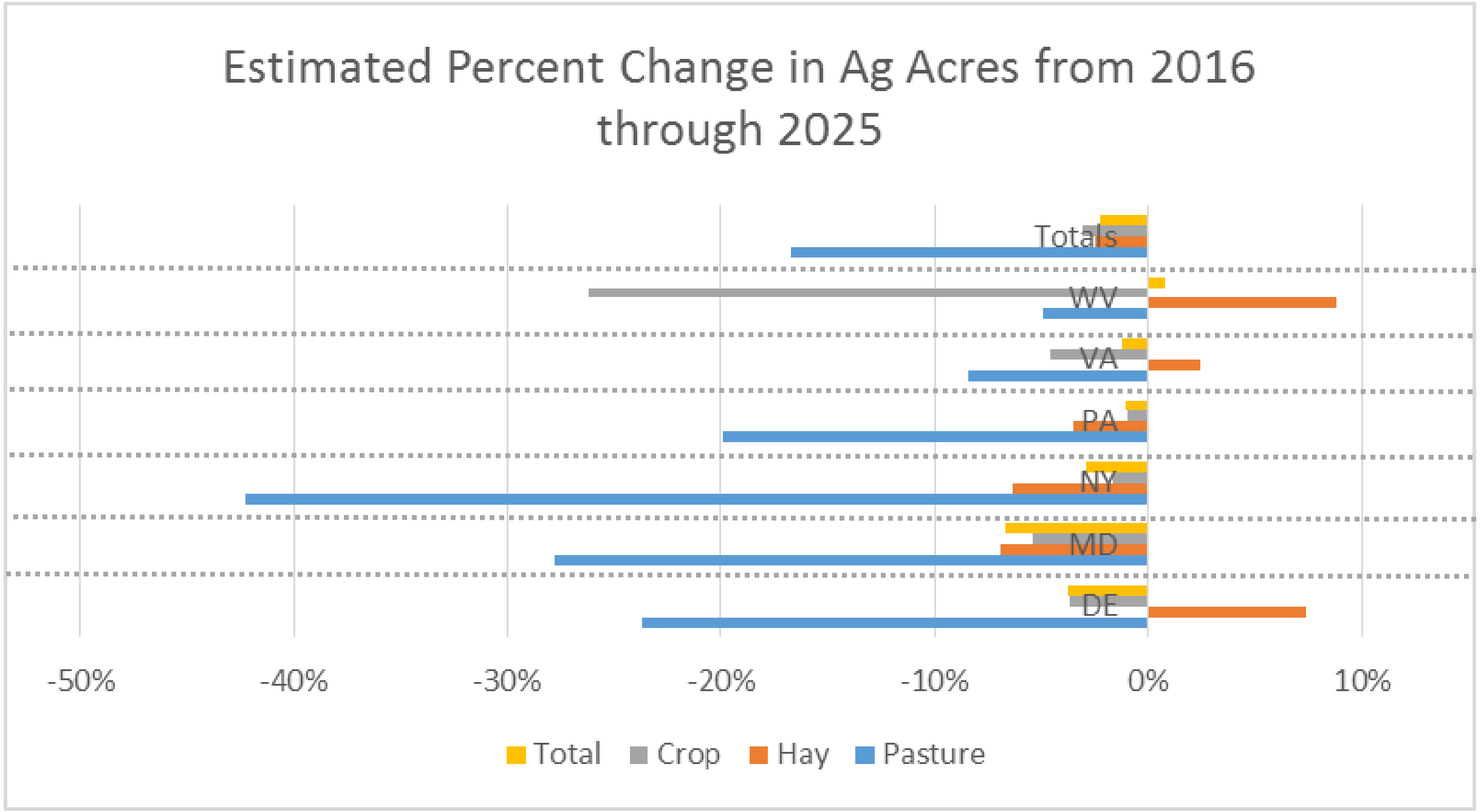


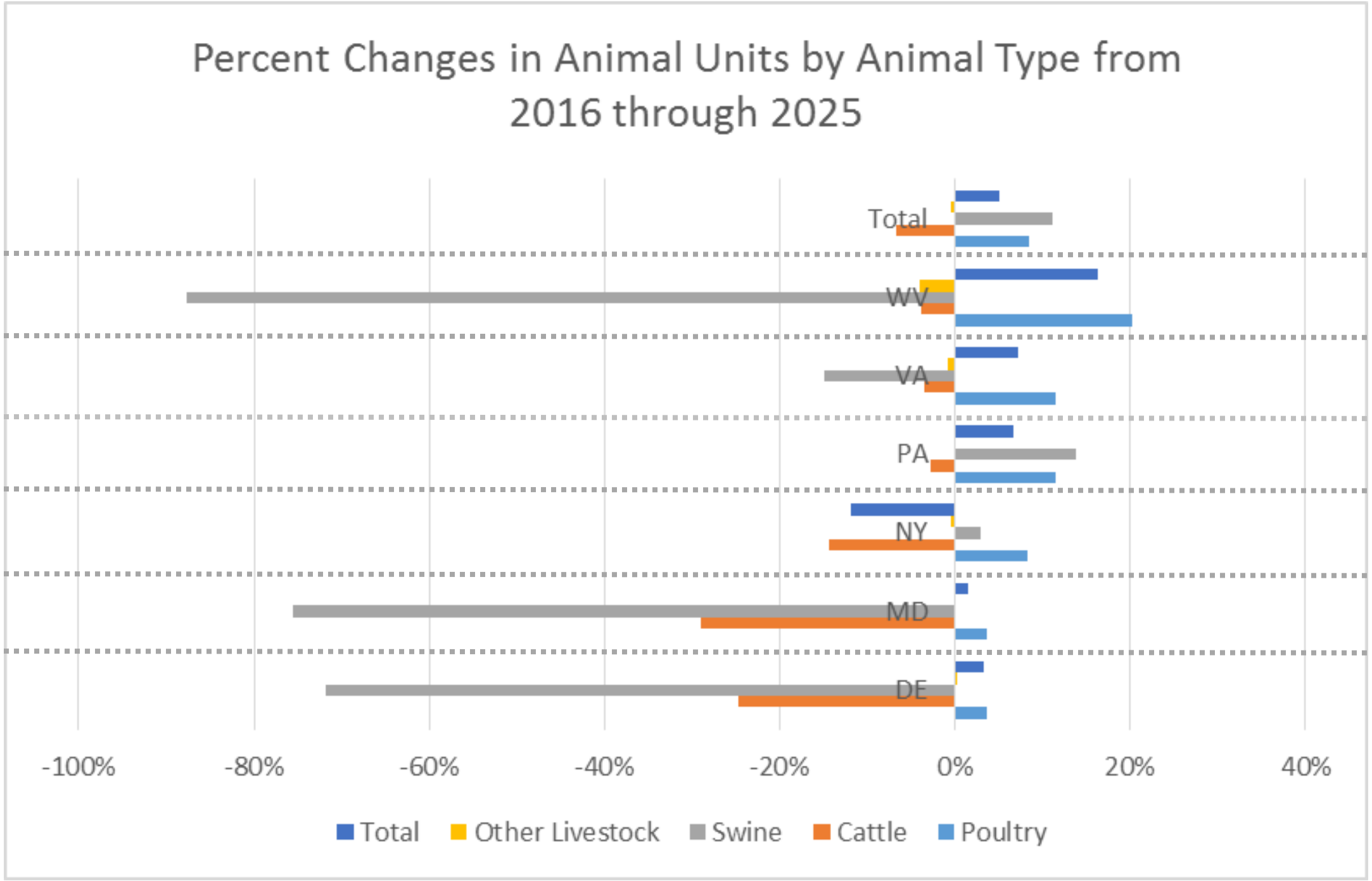
Increase in Turf Grass



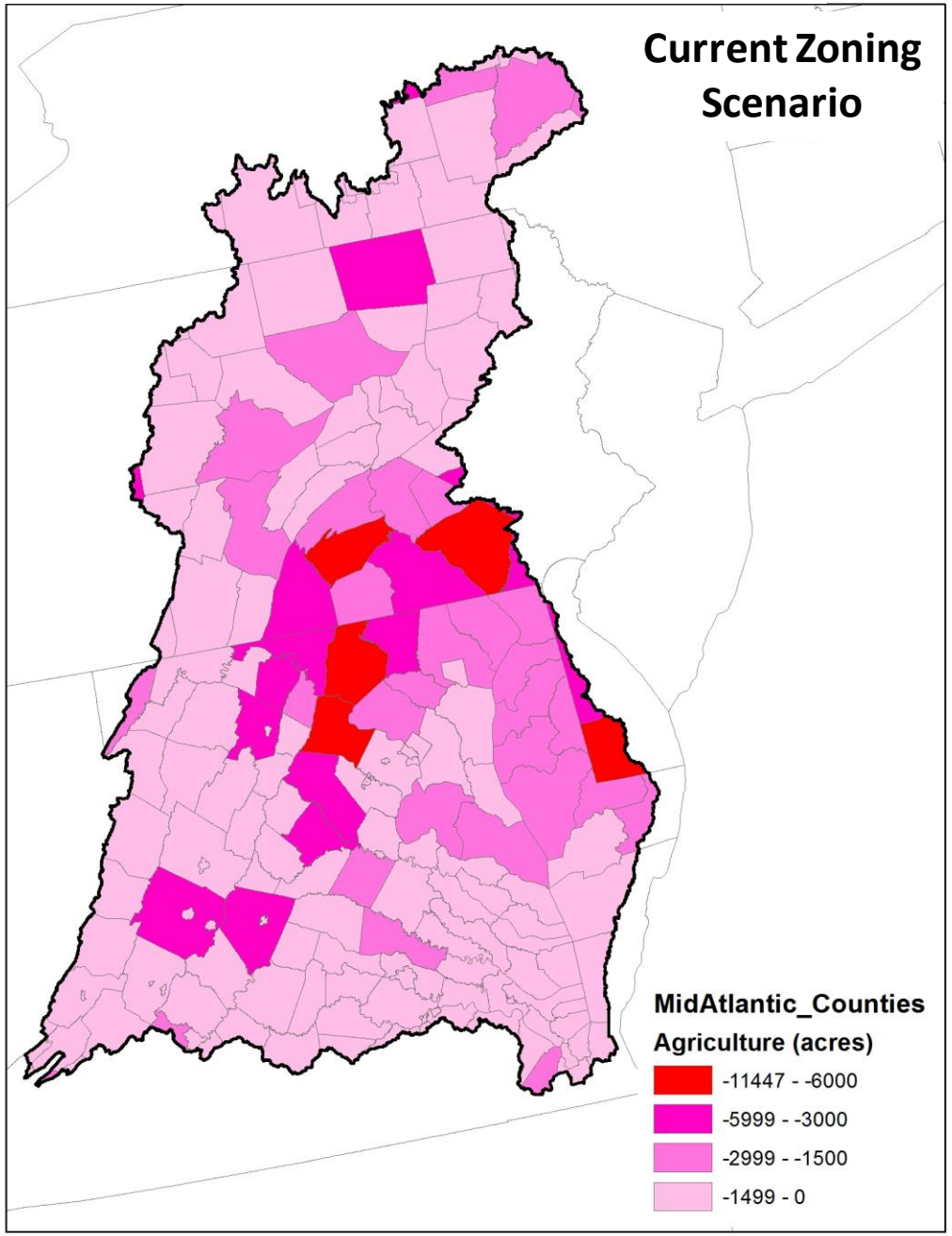
Growth on Sewer and Septic



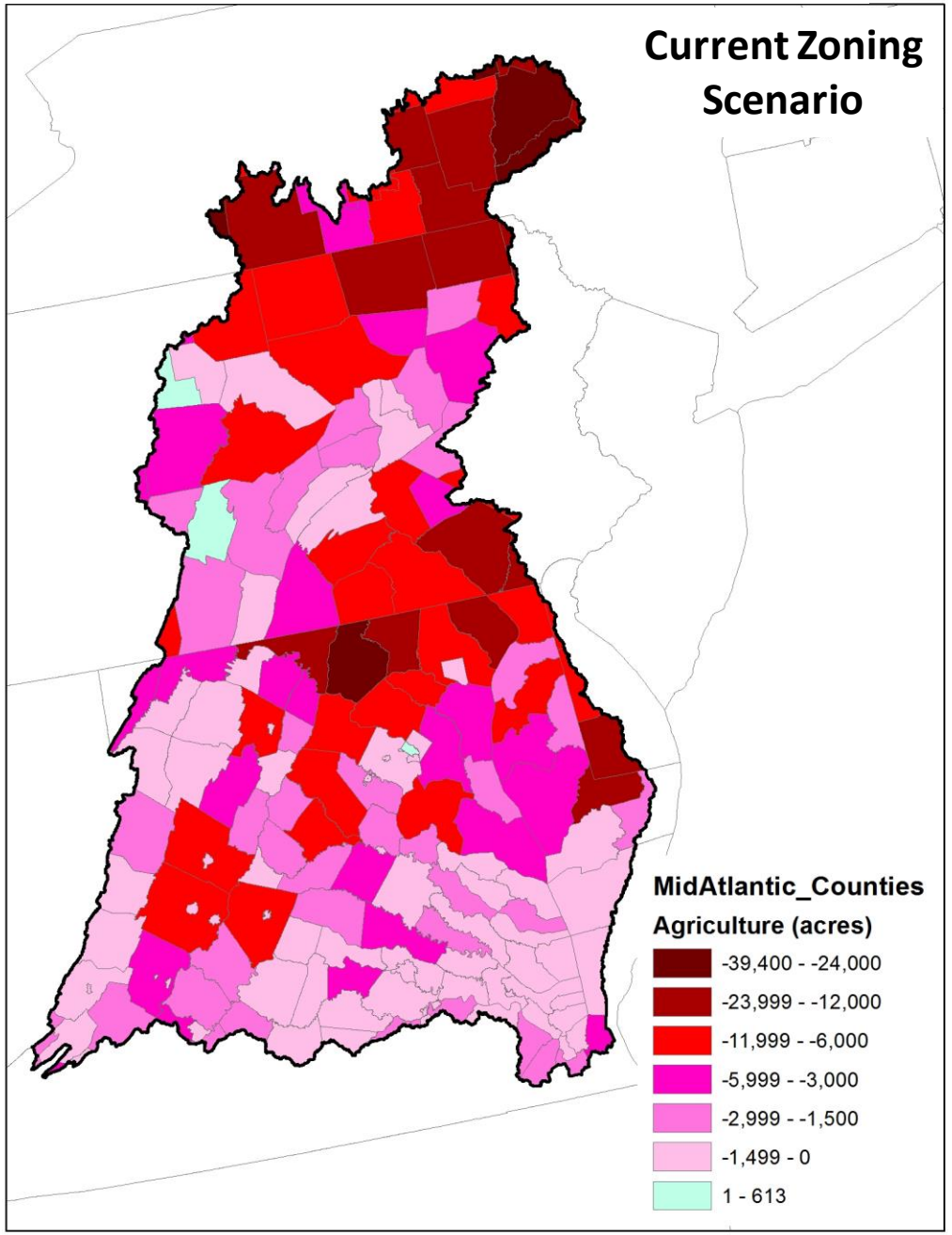

Estimated Percent Change in Ag Acres from 2016 through 2025
Totals
WV
VA
PA
NY
MD
DE
-50%
-40%
-30%
-20%
-10%
0%
10%
Total
Crop
Hay
Pasture


Percent Changes in Animal Units by Animal Type from 2016 through 2025
Total
WV
VA
PA
NY
MD
DE
-100%
-80%
-60%
-40%
-20%
0%
20%
40%
Total
Other Livestock
Swine
Cattle
Poultry

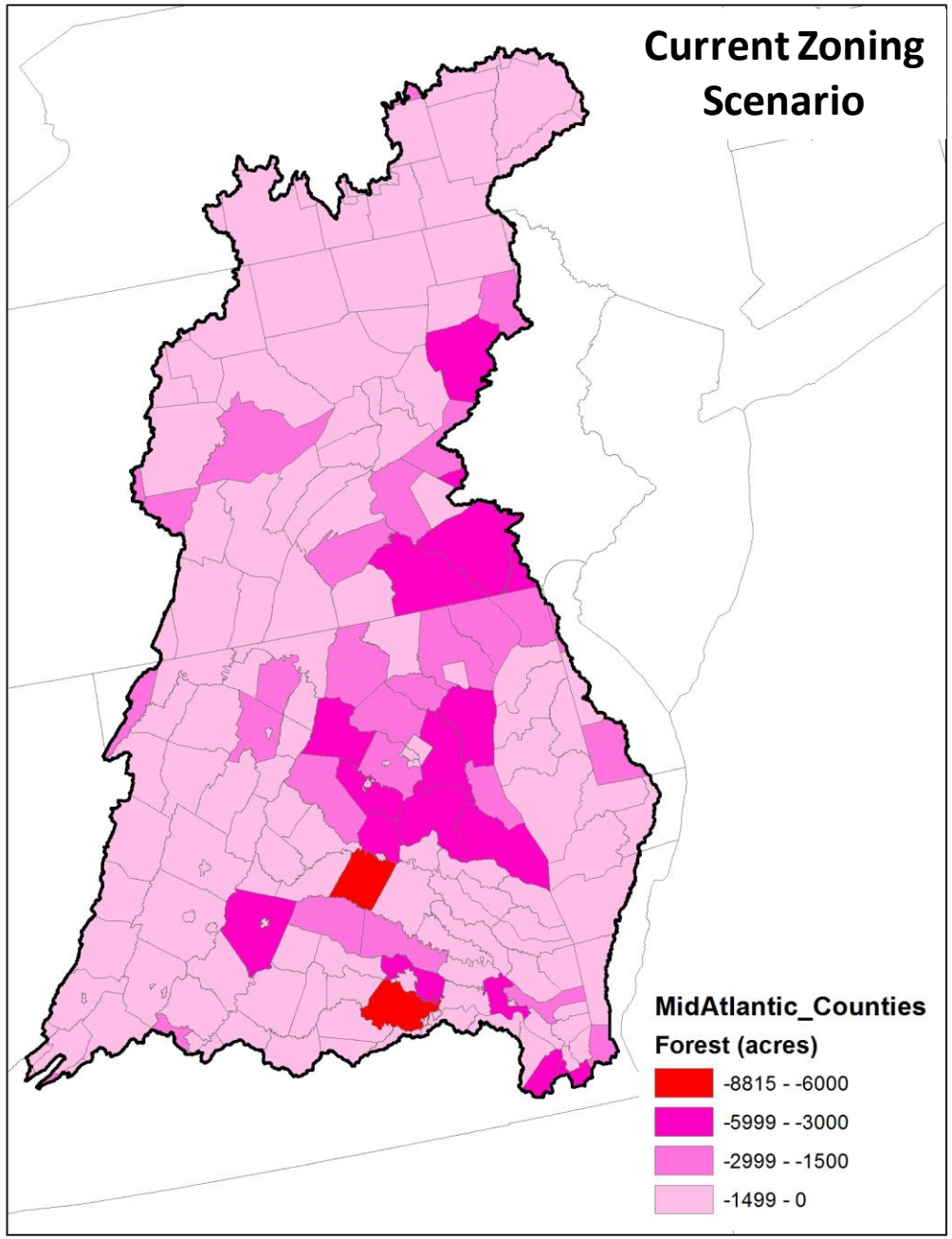
Farmland Conversion to Development



Farmland Conversion + Land Retirement



Forest Conversion to Development



How can FWG participate?

- Respond to Conservation Plus scenario survey by December 11th.
- Participate in Phase III WIP development activities.
- Consider land change modeling needs- e.g., vulnerability of Chesapeake Conservation Partnership priority areas, valuation of forest loss, alternative out-years (e.g., 2040, 2050, 2100).