Phase 6 Developed Land Uses

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U.S. Geological Survey

Land Use vs. Land Cover

- Low-density Residential
- Transportation
- Agriculture
- Rural conservation

- Impervious surfaces
- Tree canopy
- Herbaceous
- Barren

Phase 6 Land Uses

- Impervious-Roads
- Forests
- Turf Grass
- Open Space

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P6 Developed Land Uses

Impervious Roads (MIR, CIR, NIR): paved and unpaved roads and bridges.

Impervious Non-Roads (MNR, CNR. NNR): buildings, driveways, sidewalks, parking lots, runways and some private roads.

Turf Grass (MTG, CTG, NTG): all herbaceous lands within 200m of roads in developed areas that have an average lot size <=5 acres.

Tree Canopy (MTC, CTC, NTC): small fragments of trees or shrubs overhanging herbaceous and impervious surfaces located inside/outside developed areas. Note that we are mapping TC over impervious surfaces (TCIR, TCINR) in case unique loading rates are developed for these land uses.

Construction (CON): reported acreage of land with Erosion & Sediment Control permits located inside/outside developed areas.

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P6 Natural Land Uses within Developed Areas

Forest (FOR): contiguous patches of trees and shrubs, >= 1 acre, assumed to have an unmanaged understory

Wetlands (TWET, FWET, HWET): National Wetlands Inventory (NWI) non-pond, non-lake wetlands divided into tidal, floodplain, and headwater subclasses based on NWI attributes and landscape position

Water (WAT): All waterbodies mapped by the National Hydrography Dataset, NWI ponds & lakes, and the National Land Cover Dataset (Open Water). Assumes all single-line streams are 15' wide.

Open Space (OS): non-fertilized herbaceous and non-forest scrub/shrub that is justifiably not turf or extractive (e.g., beaches, vacant lots, transmission line right-of-ways, junkyards, fairgrounds, gravel roads, railroads).

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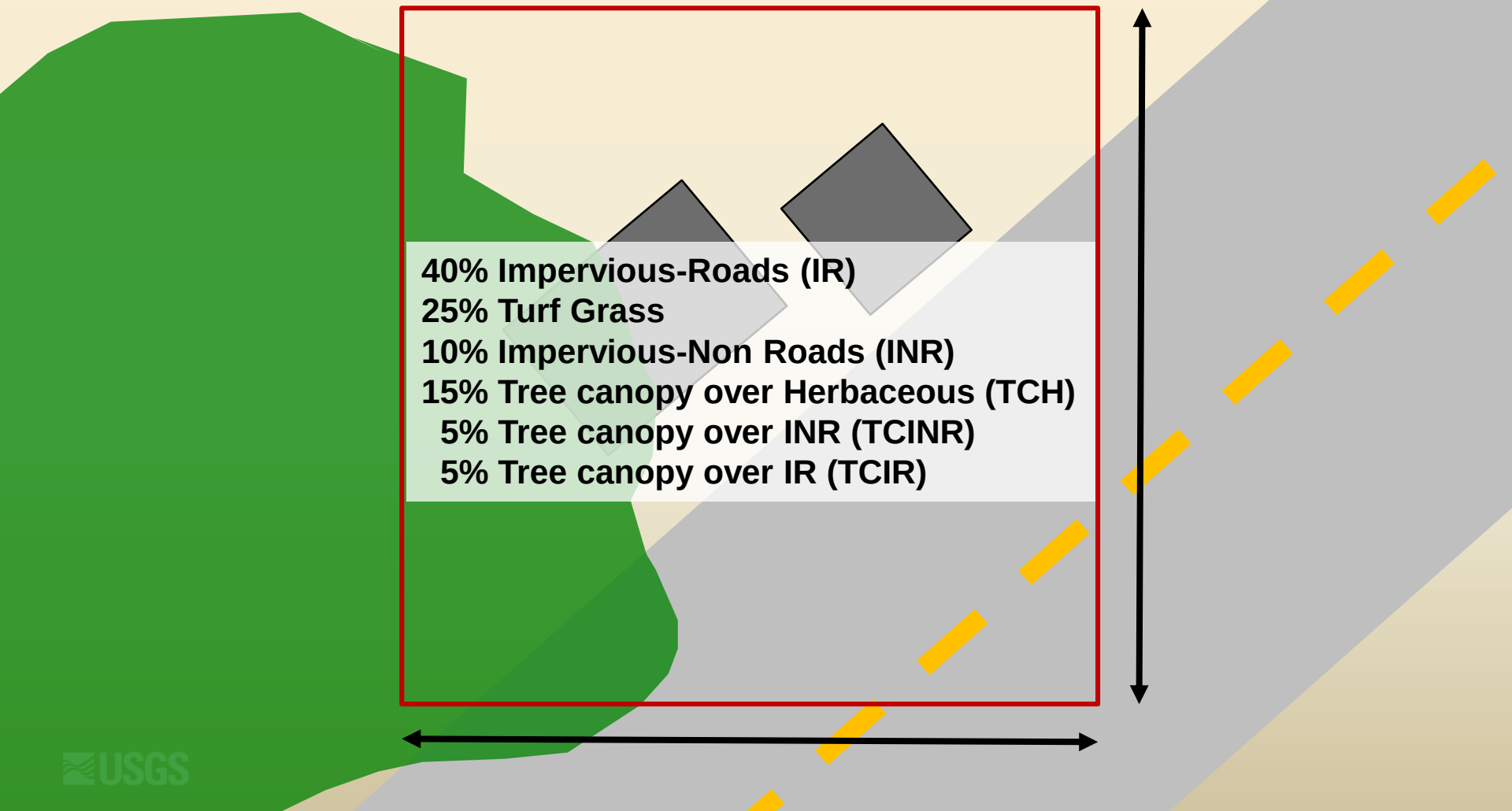
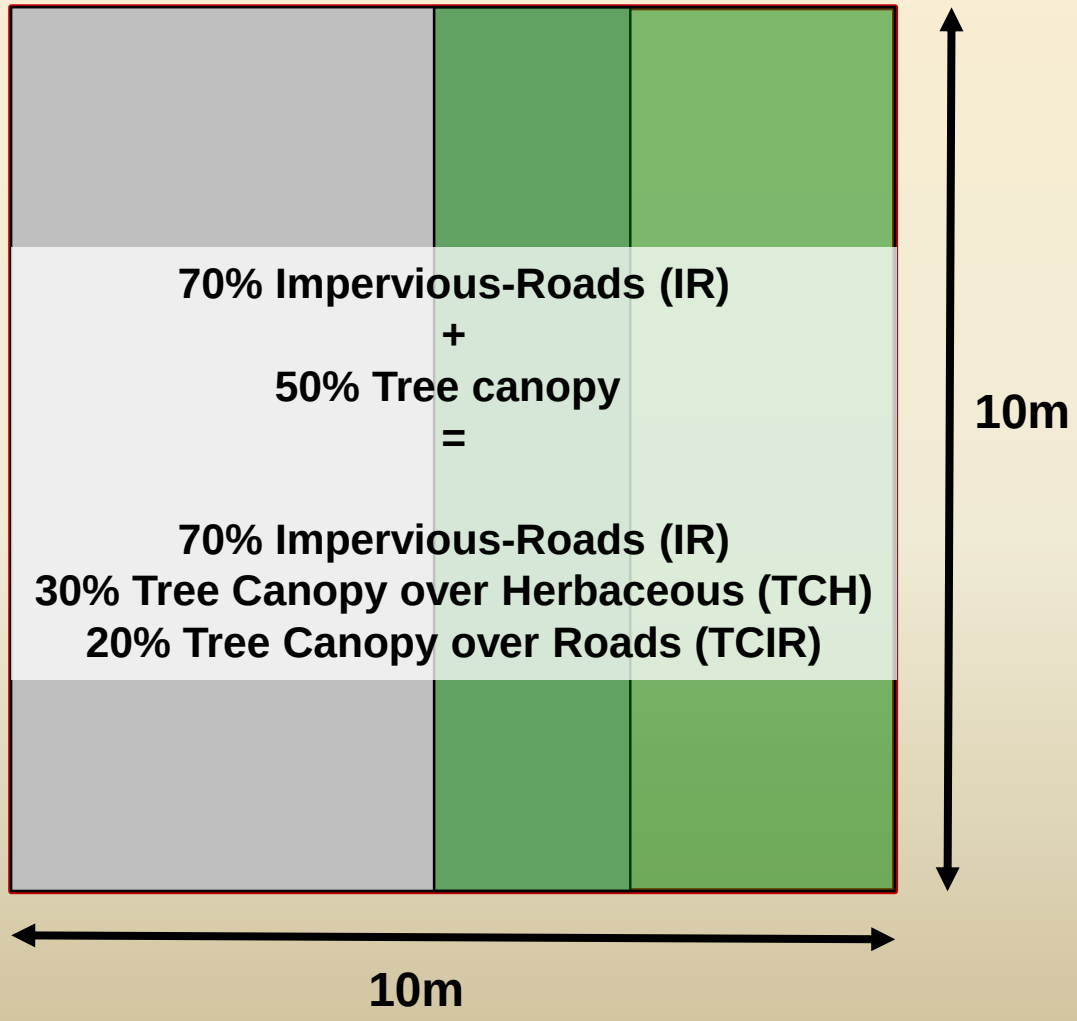
Phase 6 Land Use Database – from local data

- Fourteen different 10m resolution raster datasets
- Most with fractional and continuous pixel values



Phase 6 Land Use Database – from national data

- Assume minimal overlap among tree canopy, turf grass, and impervious surfaces within the same pixel.



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Phase 6 Land Use Database for 2011 baseline
Rural Development from National Data

- Estimate total housing units outside developed lands
- Assume majority are single-detached units
- Assume rural average lot size = 2.24 acres
- Assume acreage of impervious per lot same as in Phase 5.3.2 (see table below)
- Multiply remaining portion of lot by the percent of tree canopy within 100m of roads…
- Add result to Turf Grass area.

Acreage of Impervious per Lot

Median	Suburban	Rural
DC	0.073	0.177
DE	0.116	0.149
MD	0.135	0.177
NY	0.095	0.113
PA	0.077	0.148
VA	0.085	0.150
WV	0.076	0.109
All States	0.094	0.140

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Extrapolating Land Uses from 2011 to 1984 - 2013

STEP 1.

Change in Total Housing Units (e.g., 2011 – 2006) *

Estimated percent of housing change associated with single unit building permits *

Ratio of Acres Developed to Total Housing Units =

Acres of Development (2011 – 2006)

STEP 2.

- Multiply portion of IR associated with INR by * % change in development and subtract from 2011 baseline.
- Multiply INR by % change in development and subtract from baseline.
- Multiply TG by % change in development and subtract from baseline.
- Multiply portion of TCH in developed areas by % change in development and subtract from baseline.

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Extrapolating Land Uses from 2011 to 1984 - 2013

STEP 3.

Adjust open space, forest, and mapped agricultural acreages based on observed changes in corresponding land cover classes from 2011 – 2006.

STEP 4.

Mass balance total acreage by adjusting area of Open Space, Forest, and Agricultural Land proportionally. Note that exact acreage of agricultural land comes from Census of Agriculture.

STEP 5.

Multiply estimates of Impervious Roads, Impervious Non-Roads, Turf Grass, and Tree Canopy over Herbaceous by 2011 proportions of those classes within MS4s and CSOs. These proportions are held constant through time.

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Coming Soon: 2013/14 High-res Land Cover Data

Derived from existing 1m leaf-on aerial imagery, leaf-off aerial imagery (where available), and LiDAR-derived digital surface models.

Produced by the Chesapeake Conservancy, University of Vermont, and another vendor for VA.

Paid for by the Chesapeake Bay Program Partners and VA legislature.

Classification:

- Water
- Wetlands (emergent only)
- Tree canopy
- Tree canopy over impervious roads
- Tree canopy over impervious structures
- Scrub/shrub
- Herbaceous/grass
- Barren
- Impervious Roads
- Impervious Structures etc.

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P6 Land Use Development Schedule

May 2015	Complete regional land use dataset using nationally available data: Phase 6 Land Use Database v1 (P6LU_v1).
Jun - Jul 2015	Jurisdictional proof of concept review of how CBP is using their data.
Sep 1, 2015	Incorporate local land use/cover data. Submit P6LU_v2 to CBP Modeling Team.
Sep'15 - May'16	Incorporate additional local data and high-res land cover into P6 Land Use Database (P6LU_v3).
Jan – Jul 2016	Rolling jurisdictional review of P6LU_v3 and CBPO response to comments.

Aug 2016 Finalization of P6LU_v3 database (1985 – 2014)

Sep 1, 2016	Submit P6LU_v3 database to CBP Modeling Team

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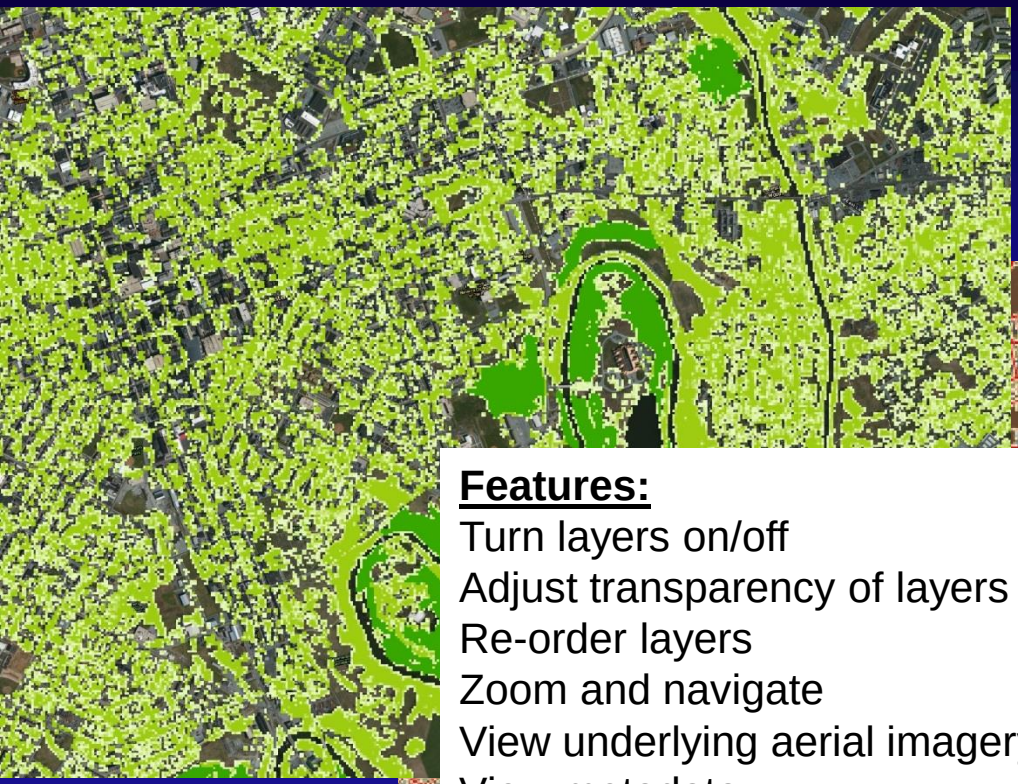
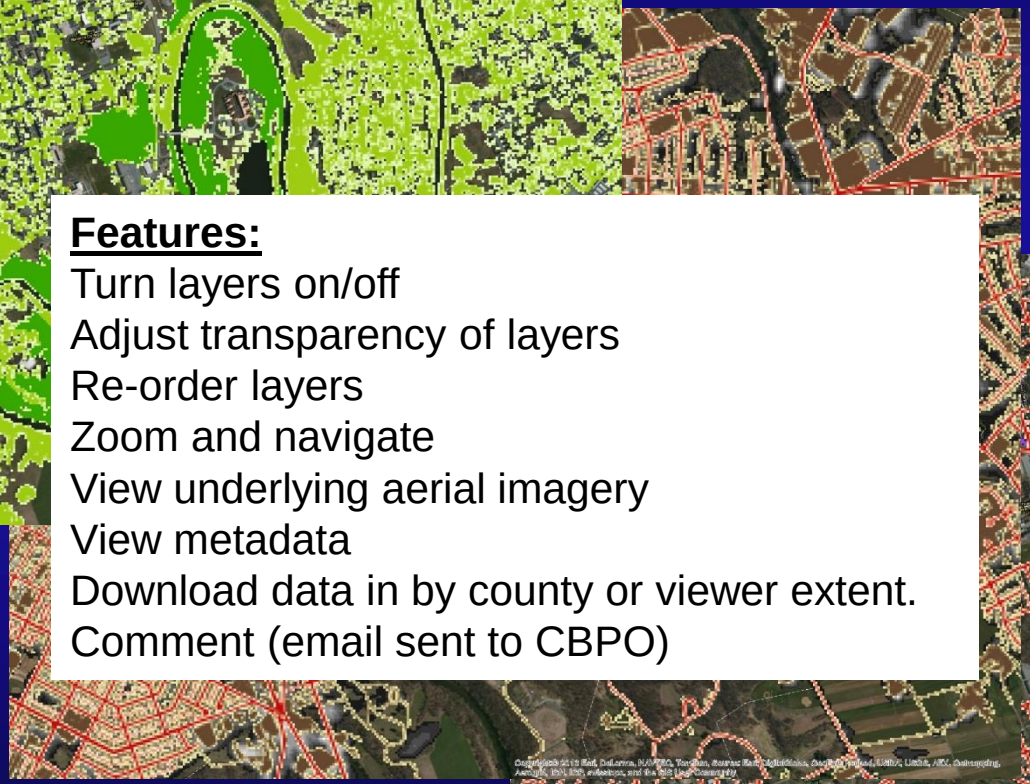
Phase 6 Land Use WebViewer (for jurisdictional review)





Features:

Turn layers on/off
Adjust transparency of layers
Re-order layers
Zoom and navigate
View underlying aerial imagery
View metadata
Download data in by county or viewer extent.
Comment (email sent to CBPO)

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