History

- O Key Points
  - O Based on Anderson's Land Use and Land Cover Classification System
  - O Updates to the LULC in 2010 included the addition of new categories Low Density Residential and Transportation
  - O Capture of LULC categories done at 1:12,000 scale consistent with NAIP Imagery resolution

1973
- Maryland Department of Planning (MDP) First creates the Land Use/Land Cover Dataset

2002
- MDP Updates the Land Use/Land Cover

2010
- MDP Updates the Land Use/Land Cover utilizing 2007 NAIP and 2008 Property View parcel info

Anderson's Land Use and Land Cover Classification

Level 3

Level 2

11-Low Density

1-Residential

12-Medium Density

Level 1

14-Commercial

13-High Density

1-Urban Built Up Land

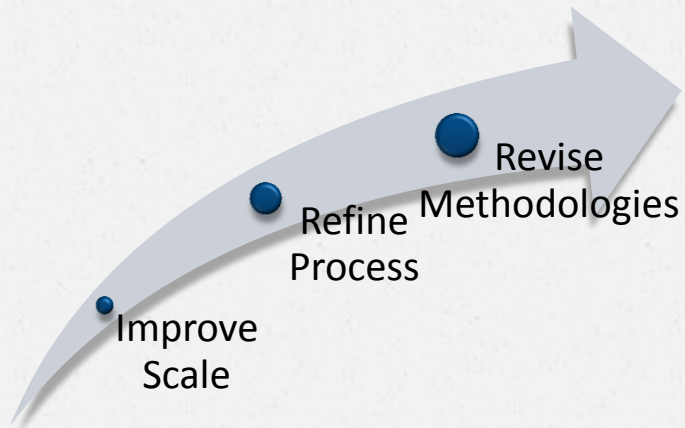**15-Industrial**

16-Institutional

18-Open Urban Land

O The above example shows MDP's interpretation of Anderson's LULC for Urban Built Up Land as used in 1973 and 2002. 2010 saw the addition of additional categories 191 and 192 which are what could be considered a Level 4 for 11-Low Density Residential
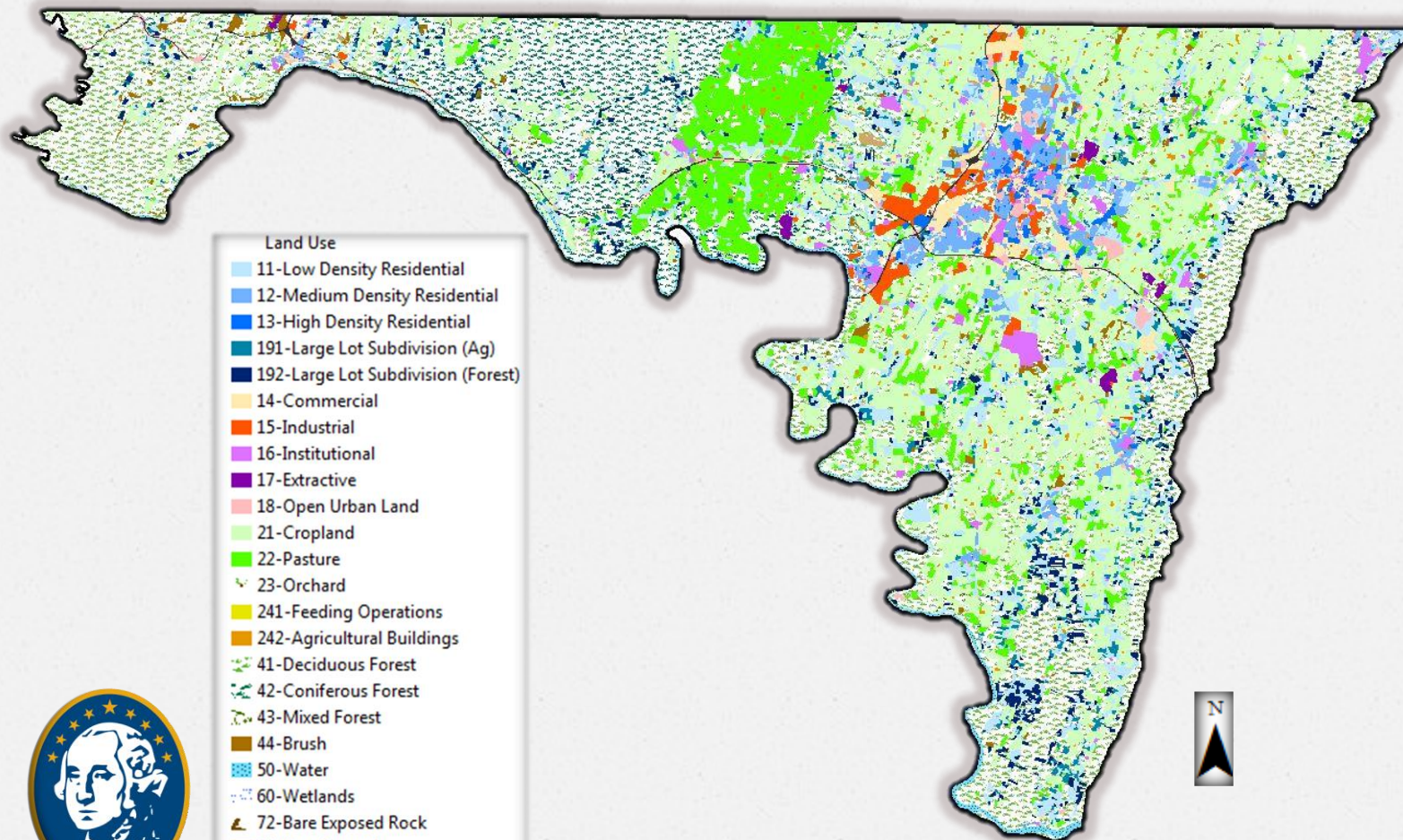
Why Create Our Own?

O Washington County Department of Planning and Zoning (P&Z) saw an increased use of the Land Use/Land Cover dataset in Maryland State Legislation for decision making (examples: WRE, WIP, Septic Tier Mapping, and Comprehensive Plan)

O P&Z questioned the accuracy of the dataset for decision making

   O Scale

   O Update Process

   O Methodology

Improve Scale

Refine Process

Revise Methodologies

2010 MDP Land Use

Land Use
- 11-Low Density Residential
- 12-Medium Density Residential
- 13-High Density Residential
- 191-Large Lot Subdivision (Ag)
- 192-Large Lot Subdivision (Forest)
- 14-Commercial
- 15-Industrial
- 16-Institutional
- 17-Extractive
- 18-Open Urban Land
- 21-Cropland
- 22-Pasture
- 23-Orchard
- 241-Feeding Operations
- 242-Agricultural Buildings
- 41-Deciduous Forest
- 42-Coniferous Forest
- 43-Mixed Forest
- 44-Brush
- 50-Water
- 60-Wetlands
- 72-Bare Exposed Rock
- 73-Bare Ground
- 80-Transportation

Things to Consider

O Need to be true to MDP LULC

O Need to closely examine the methodology of MDP and revise accordingly

O Update vs. New

O Scale and Source

O How the data will be used and who the data will be used by

O Consequences of updating

O Time and staffing

O QA/QC

O Distribution

Where Did We Start…

O Researched Anderson's Land use and Land Cover Classification System for Use with Remote Sensing (Geological Survey Professional Paper 964, US Government Printing Office, 1976)

O Examined the MDP 2010 Land Use/Land Cover Update Metadata

O Decided on what to keep and what to toss from both methodologies

O Used Knowledge of 1973, 2002 and 2010 versions to carry certain thought processes forward

O Decided on who was performing the tasks, how those tasks would be divided

Data Construction

Geodatabase Creation

- Includes Feature Dataset to enable topology
- Topology Created to make sure there were no gaps or overlaps
- Created a blank Feature Class LULC DRAFT with fields including LU Code, Acreage, Level 1, Level 2 and Level 3 LULC Categories
- Exported a copy of the Washington County Digital Parcels and Merged ALL into a single Polygon
  - Increased Extent from MDP Version
  - Makes sure every county parcel has a LULC for future analysis
- Loaded Feature Class into the empty Feature Class for LULC DRAFT

Phase Creation

- County was divided into 4 phases:
  Phase 1=Western Area to Conococheague Creek
  Phase 2=Southern County from Sandy Hook to Interstate 70
  Phase 3=Eastern Area from Pen Mar/Cascade to Easternmost Urban Growth Area Boundary
  Phase 4 =Central Remaining Portion
- Helped to create definitive stopping points for progress

Production

- Large Polygon was divided based on LULC seen at 1:2,400 scale 2011 Aerial Imagery
  - Data in the County's jurisdiction utilized aerial imagery first then address points, tax data and local knowledge used to find some uses
  - Data in municipal areas utilized aerial imagery first but also heavily depended on tax information to delineate categories.
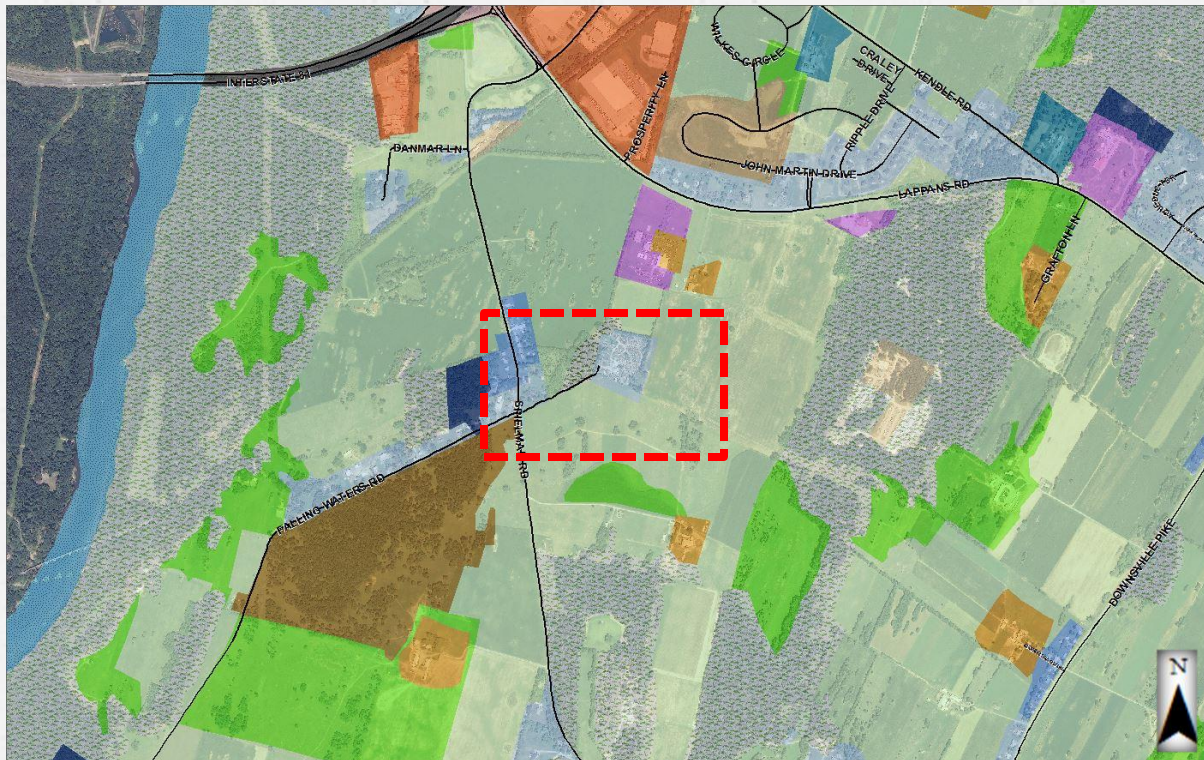
Observations

O Due to scale difference in observations, Washington County was able to more accurately delineate land uses

O There were errors in coding from MDP

    O Inconsistencies in application of definitions

    O Interpretation of Aerial Imagery incorrect

2009 Aerial at 1:12,000 Scale

2009 Aerial at 1:12,000 Scale

2009 Aerial at 1:2,400 Scale

2011 Aerial at 1:2,400 Scale

2011 Aerial at 1:2,400 scale: County Proposed LU
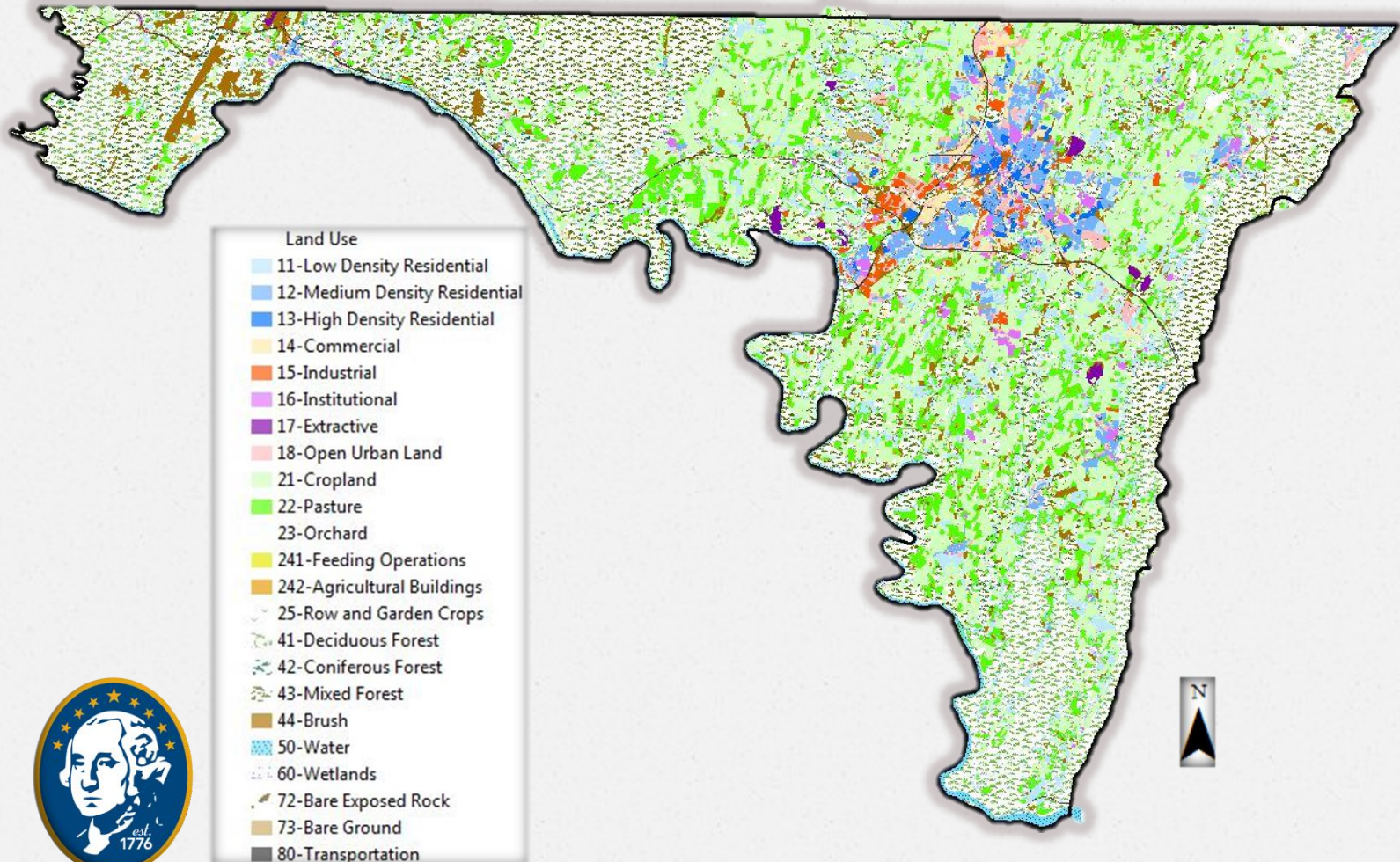
Quality Assurance/Quality Control

O This dataset covers over 200,000 acres so in order to check the dataset we decided on random generated points throughout the data

O We decided on 750 random sample points in the county (Used Random Points Tool in ArcGIS)

O Actually started with 100 points divided among 4 reviewers (Planning Department Users) and decided to have the remaining points reviewed by one reviewer (Planning Department, Jennifer Kinzer)

Results

O When we look at the results we wanted to examine them in several ways:

  O Change Across Levels

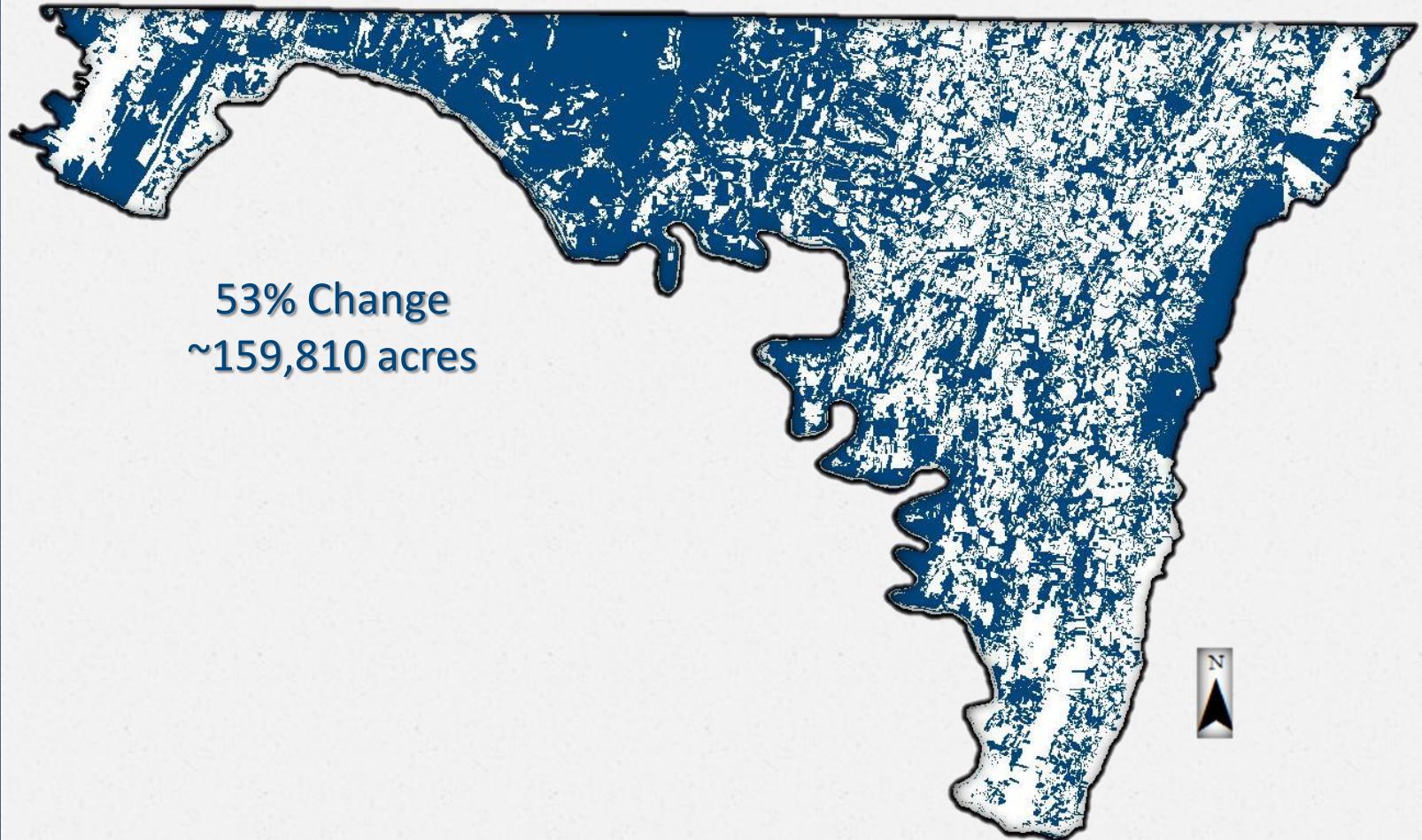 O Change In Geography

  O Change Over Time
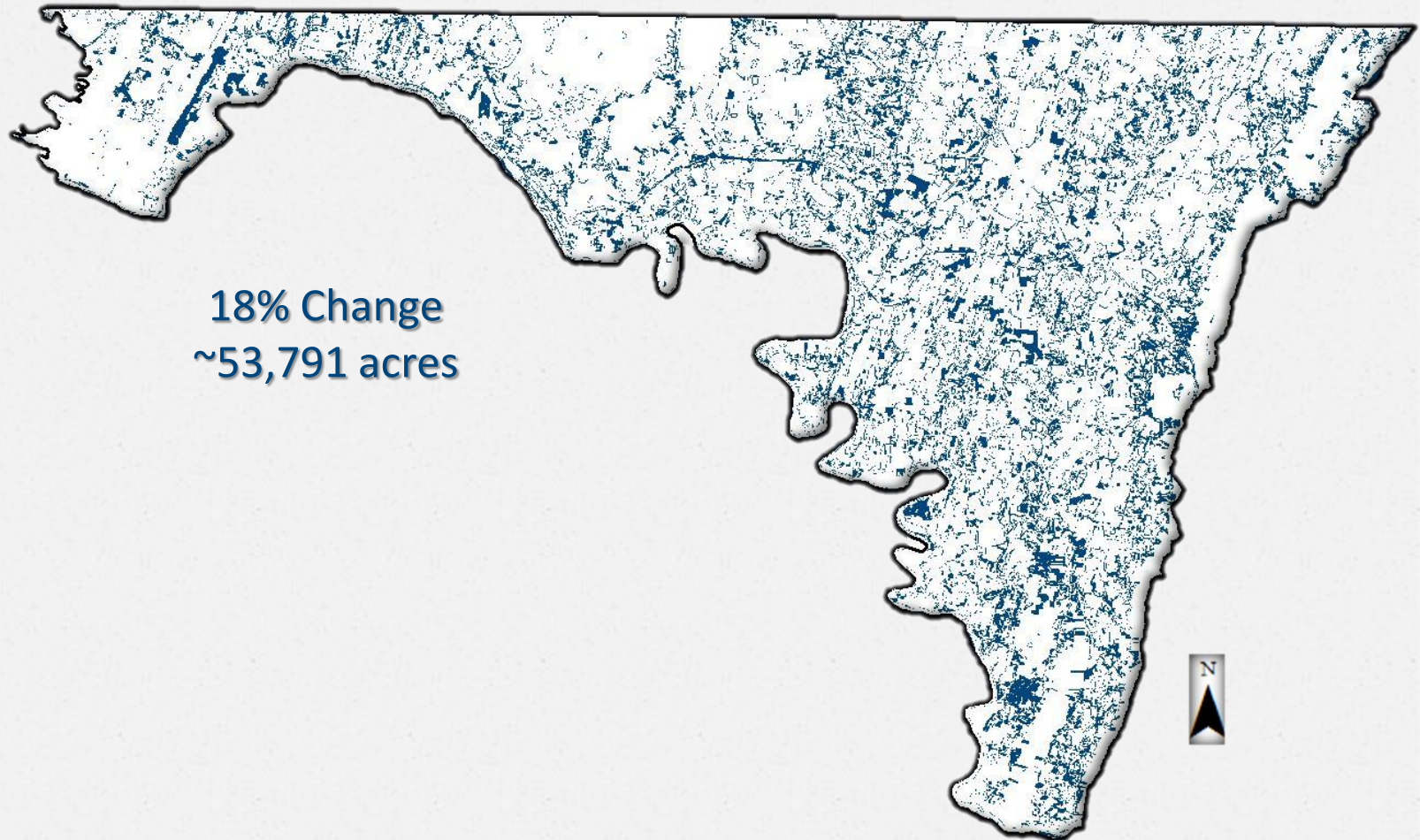
2011 County Proposed Land Use

Land Use
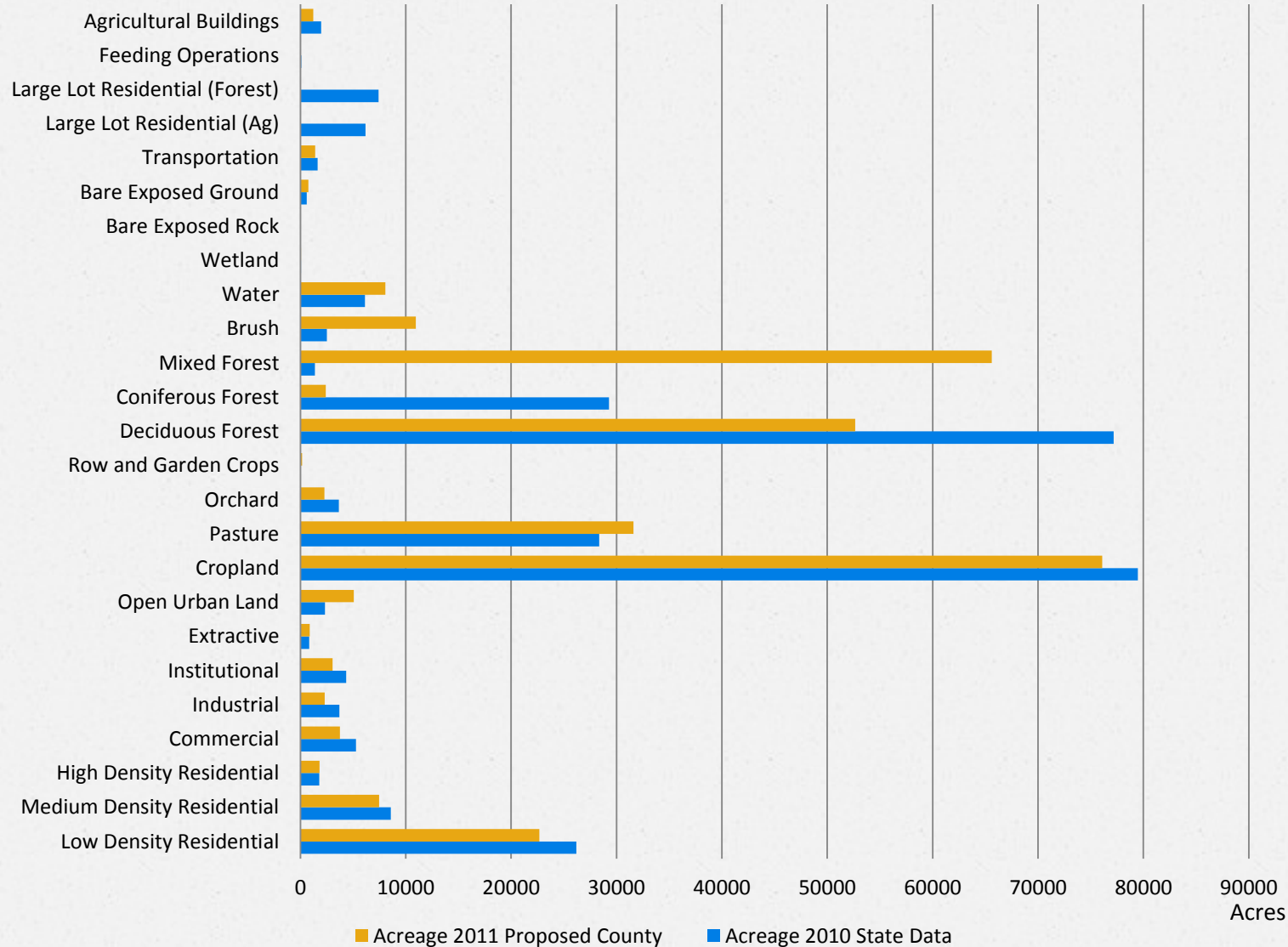- 11-Low Density Residential
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- 60-Wetlands
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- 73-Bare Ground
- 80-Transportation

Anderson Level 3 Change

53% Change
~159,810 acres

Anderson Level 1 Change

18% Change
~53,791 acres

Anderson Level 3 Acreages (Most Detailed)
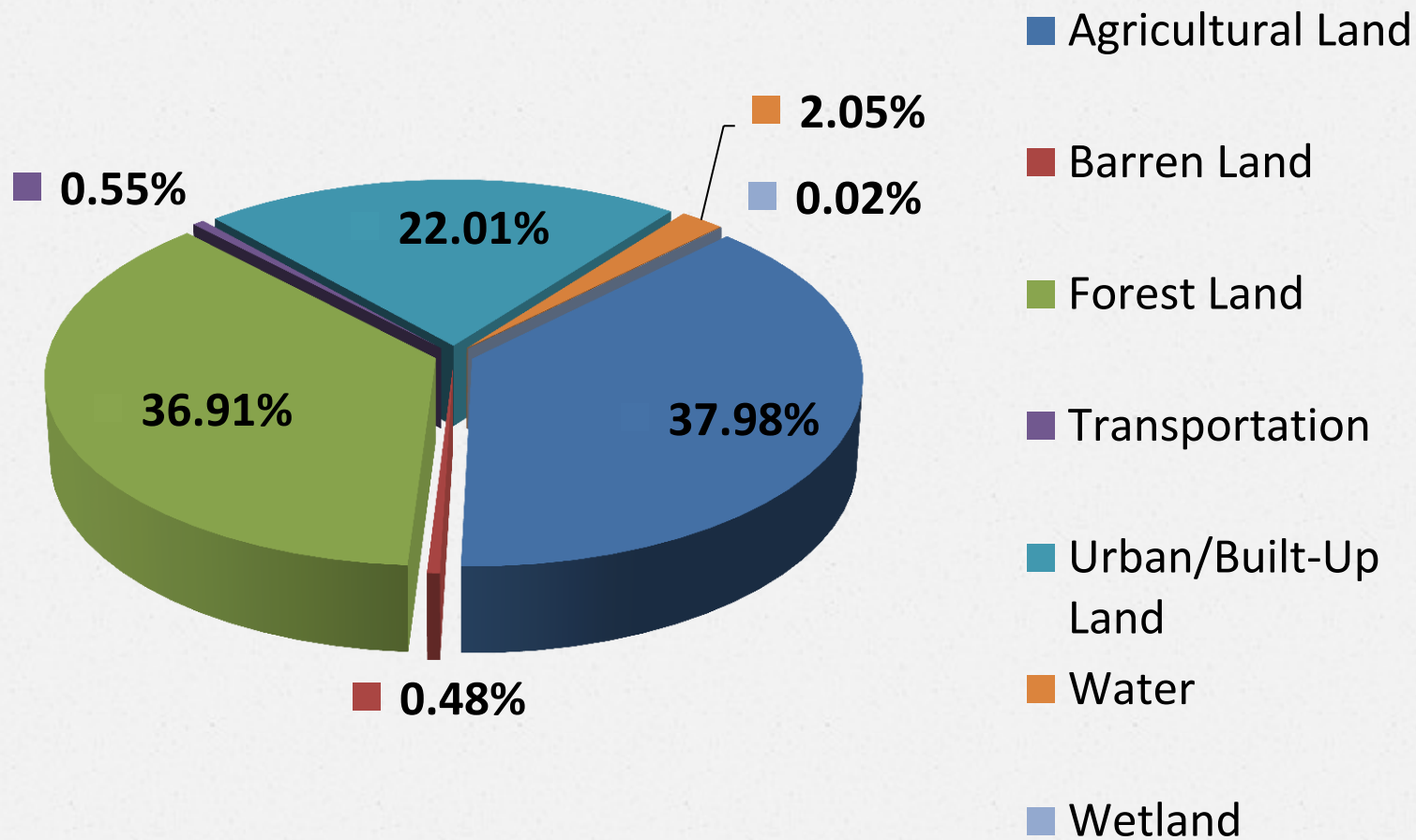
Acreage 2011 Proposed County

- Agricultural Land
- Barren Land
- Forest Land
- Transportation
- Urban/Built-Up Land
- Water
- Wetland

0.47% 15.36% 2.68% 0.02% 43.84% 37.10% 0.54%
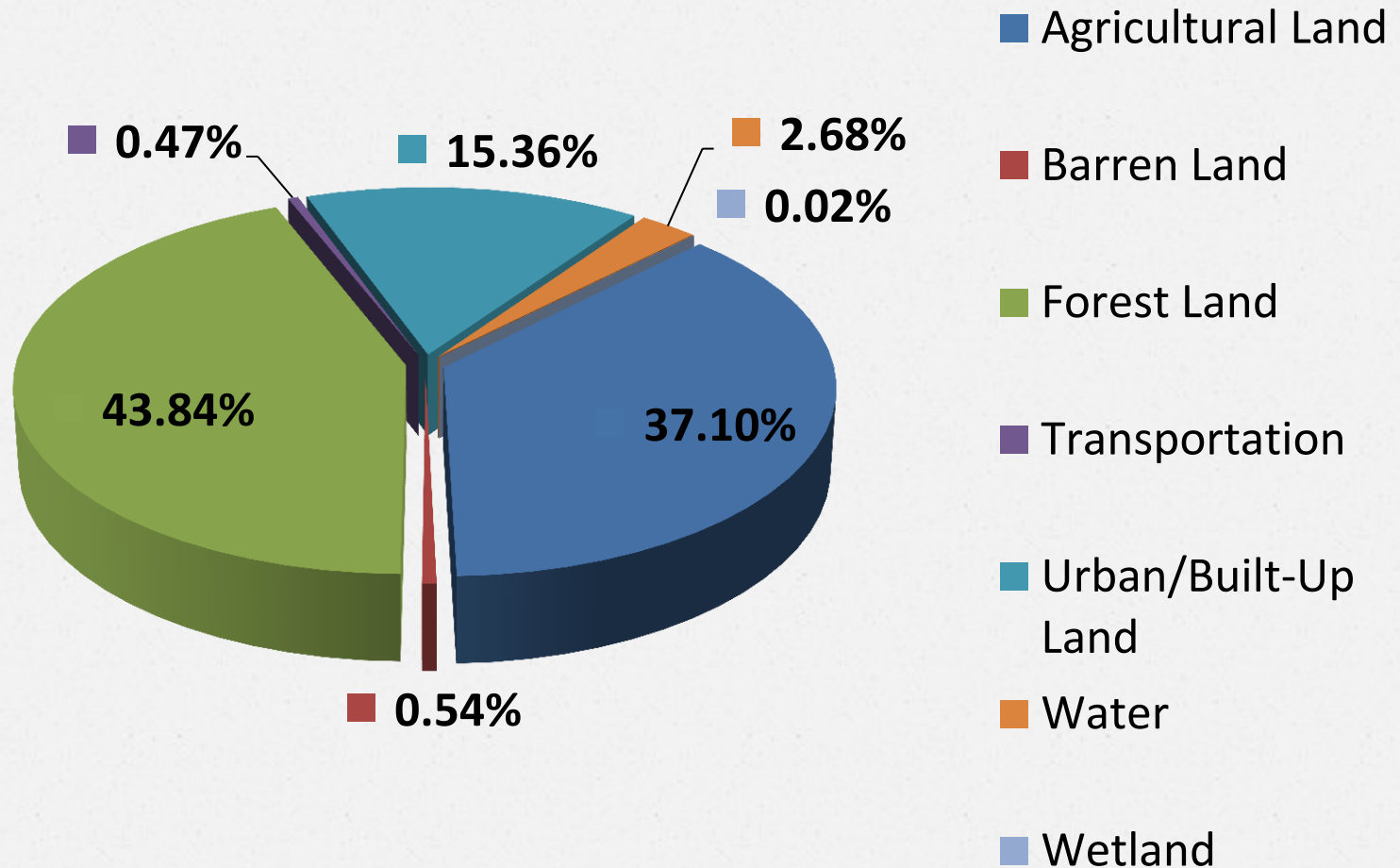
Conclusions

O Change in detail captured occurred

O Overall change in categories did not occur which provides a level of confidence that we are not overreaching with the data we have created

O Change in the location of delineations in most cases is NOT drastic

O Dataset is a viable tool for use on at least the County Planning level

O Timeline=1 person (not solely working) 1 year

   O Started July 2013

What's Next

✓ Contacted Municipalities

✓ Provided to MDP/MDE data

✓ Introduced the data product to County Staff for use

✓ Outlining the appropriate uses and conclusions that can be reached with the data along with complete metadata

O Discussion and Planning of Update Timelines

    O Target update of every 2 years or as imagery becomes available (2014 Aerials just arrived)

Impacts

O Comprehensive Plan Updates in Progress

O WRE Update in Progress as Part of Comprehensive Plan Updates

O Maryland HB706- Forest Preservation Act of 2013 or No Net Forest Loss Bill

O WIP Updates

Thank You!

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