MARYLAND

Department of the Environment

& Maryland Department of Planning

Phase 6 Land-Use

Maryland's Methods

MDP Maryland Department of Planning

MDE

Baltimore County Pilot

- Pilot project using data submitted to MDE
- Current conditions

Parcels & Address Points

Tree Canopy

Impervious Surface

Baltimore County Pilot

- Where we have focused our efforts so far
  - Canopy vs. Forest breakout
    - Preliminary investigation for specific model segments
      - Vector format
  - Turf Estimates
    - Rural residential, agricultural, and permanent easement parcels
      - Rural residential model completed
      - Finalizing agricultural and permanent easement models

Baltimore County Pilot

- Where we are still going
  - Canopy vs. forest breakout
    - 1) Complete for entire county, 2) raster analysis, and 3) biomass analysis
  - Turf estimates
    - 1) Remaining residential parcels, and 2) other developed parcels (commercial, institutional, etc.)
  - Impervious estimates
    - 1) Use county planimetric data, 2) estimate additional impervious area, 3) project to 2012

Methods

- Developed
  - Impervious
  - Turf
  - Canopy
- Natural
  - Forest
  - Wetland

Impervious

- County planimetric data
- Directly Incorporate county data into model for applicable year
- Sub-divide:
  - Buildings, parking lots, driveways, and sidewalks
  - Roads
    - MDE (SHA data)
    - CBP assistance (NAVTEQ data)
  - Farmsteads

Impervious

Missing Impervious

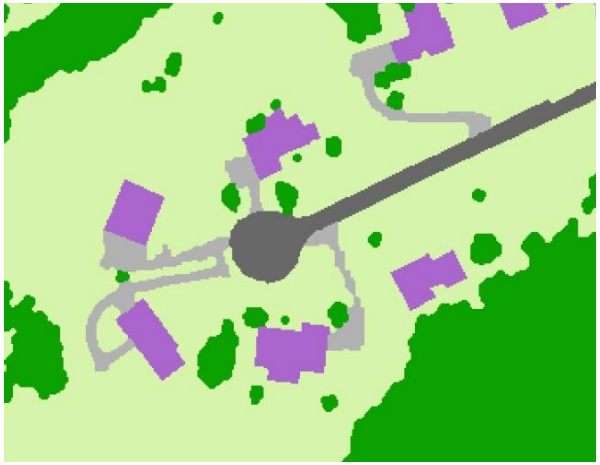
- Potential data sources
  - County land-cover raster files
  - UMD impervious surface data
  - Planimetric data from other counties
- Potential analyses
  - Impervious ratios for missing features
    - Some counties have complete planimetric datasets
    - Overlay with MDP/County parcel data
      - Calculate impervious/LU type

Project Impervious

- County data
  - Mid 2000's – 2012
- Phase 6 baseline = 2012
- Potential method
  - Have MDP parcel data for all years
  - Parcel impervious surface coefficients
    - County data year
  - Project based on increase in developed parcels
    - County data year - 2012

Canopy vs. Forest

- County data
  - 1 m raster data
  - Planimetric data
  - Direct incorporation into model
    - (Model canopy) + (model forest) = county data
    - MDE break out to canopy and forest



Forest Thresholds

- Thresholds applied from literature
  - 100 foot interior buffer
  - ¼ acre minimum size
- Polygon aggregation
  - Fill holes in canopy cover
    - Picked up in imagery (1 m)
  - Still trying to select aggregation threshold size
  - Could use 30 m UMD data to fill

Further Canopy Analysis

- Raster analysis
- Biomass analysis
  - Forest biomass > canopy biomass
    - Confirms thresholds
- Urban vs. agriculture???
  - Guidance from CBP
  - Can do with parcel overlay
- Refinement???
  - CBP tree canopy expert panel

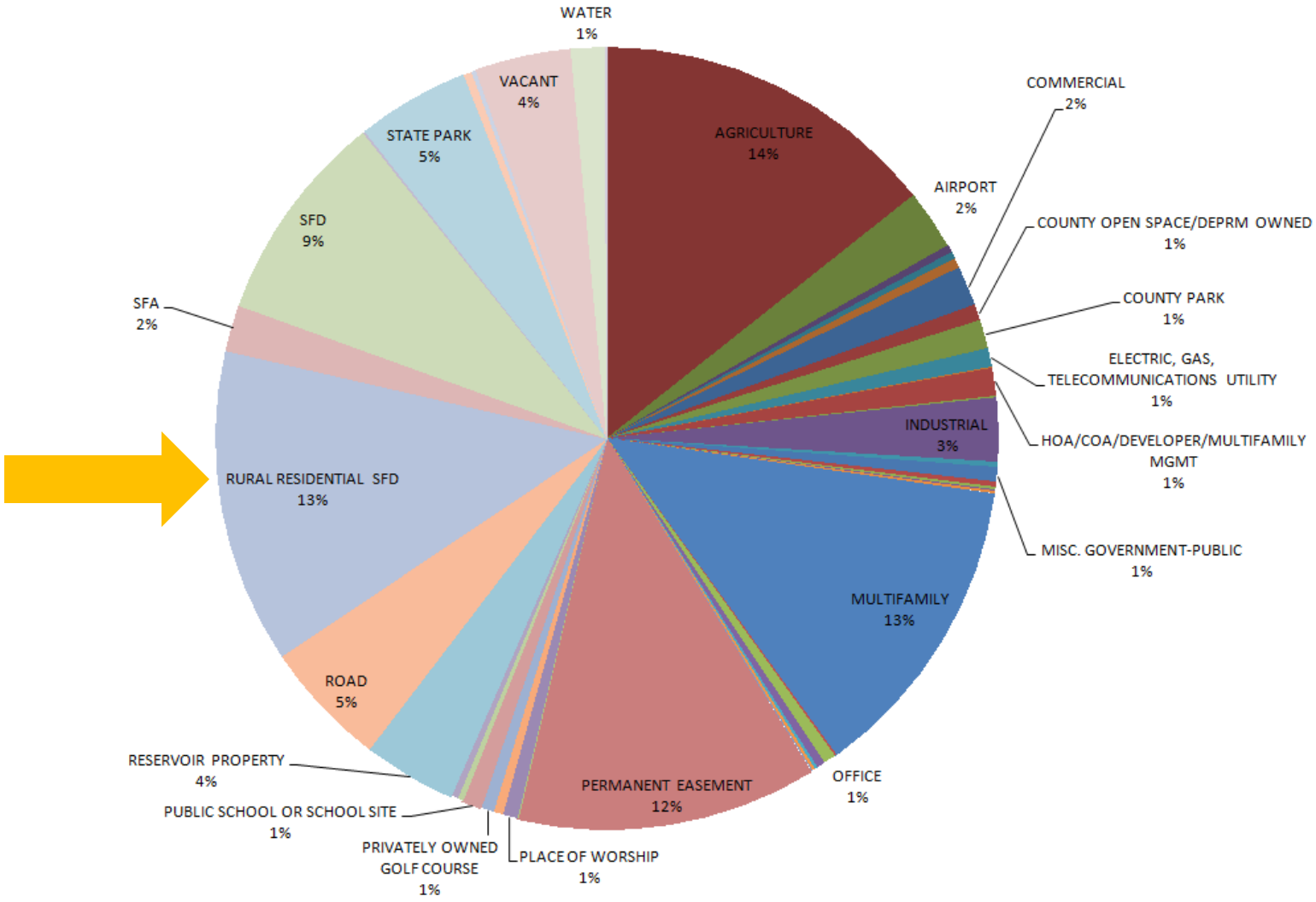
Wetlands

- NWI data
- DNR data
- MDE Wetlands program
  - Complete wetland coverage = NWI + DNR
- Method
  - Directly incorporate into model
  - Possible overlay between wetland and forest/canopy
    - Avoid double counting

Narrowing Focus

- Prioritization using county parcel data
  - Identify areas where there is confusion between turf grass and other non-developed land-covers
    - "Rural" Zone parcels
      - Rural residential
      - Agricultural
      - Permanent easements
  - Identify areas where we expect to find the most turf grass
    - "Suburban" Zone parcels
      - Multifamily, single family detached, and single family attached residential
      - Commercial
      - Institutional
      - Industrial

Narrowing Focus



Method

- Data:
  1. Parcel boundaries
  2. Land Cover Raster – Canopy
  3. Impervious Cover Polygon Shapefile
- Generate:
  1. Parcel Impervious
  2. Parcel Canopy
  3. Parcel “Leftover”

Method

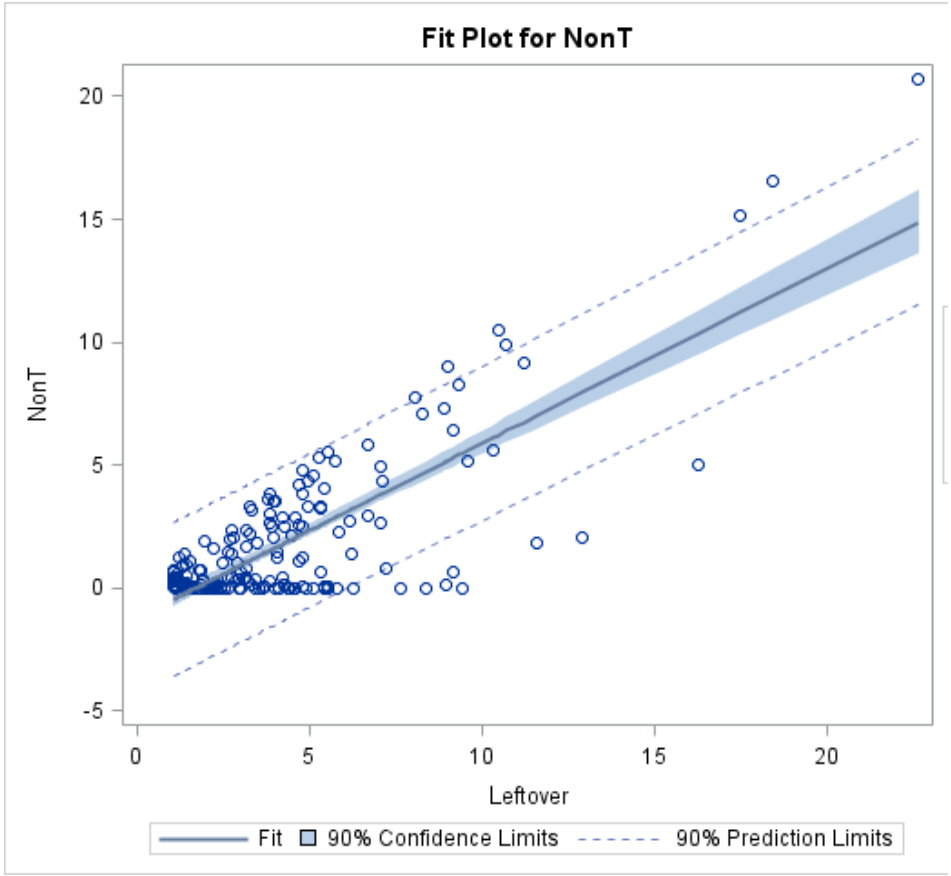
1. Exploratory Sample
   - Digitize turf on 25 randomly selected parcels
2. Create Assumptions and verify with visual samples
   - <5 acres total parcel size
   - <1 acres leftover size
3. Generate representative sample size needed - 91
   - Using median and Median Absolute Deviation (MAD) to account for skewed data
   - Specify 10% confidence around the mean as target

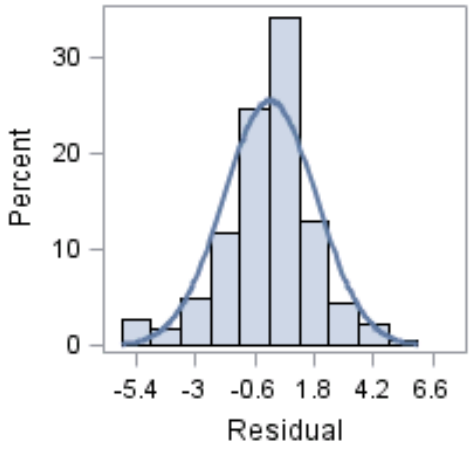
Digitizing Method

Develop Model

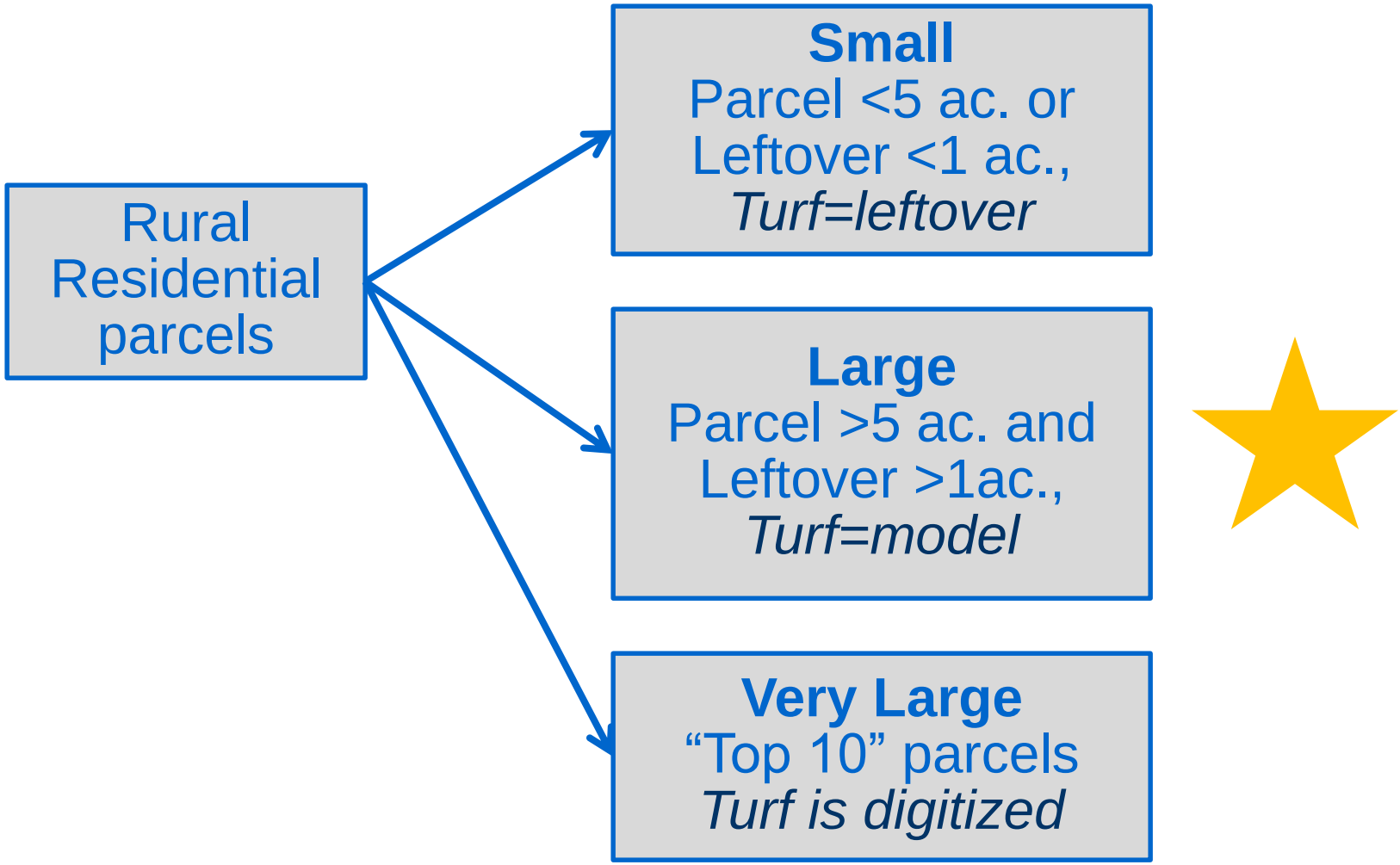
Leftover vs. Non-Turf

Turf = Leftover - max [(0.687*Leftover - 1.134), 0]





Sum of Turf Acres



Future Considerations

- Additional Data Sources
  - State-wide datasets (MDP)
  - UMD Tree Canopy data

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