Chesapeake Bay Program's "Current Zoning" and "Conservation Plus" Scenarios

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Land Use Workgroup Call

November 8, 2017

CBLCM v3a Refinements (since September)

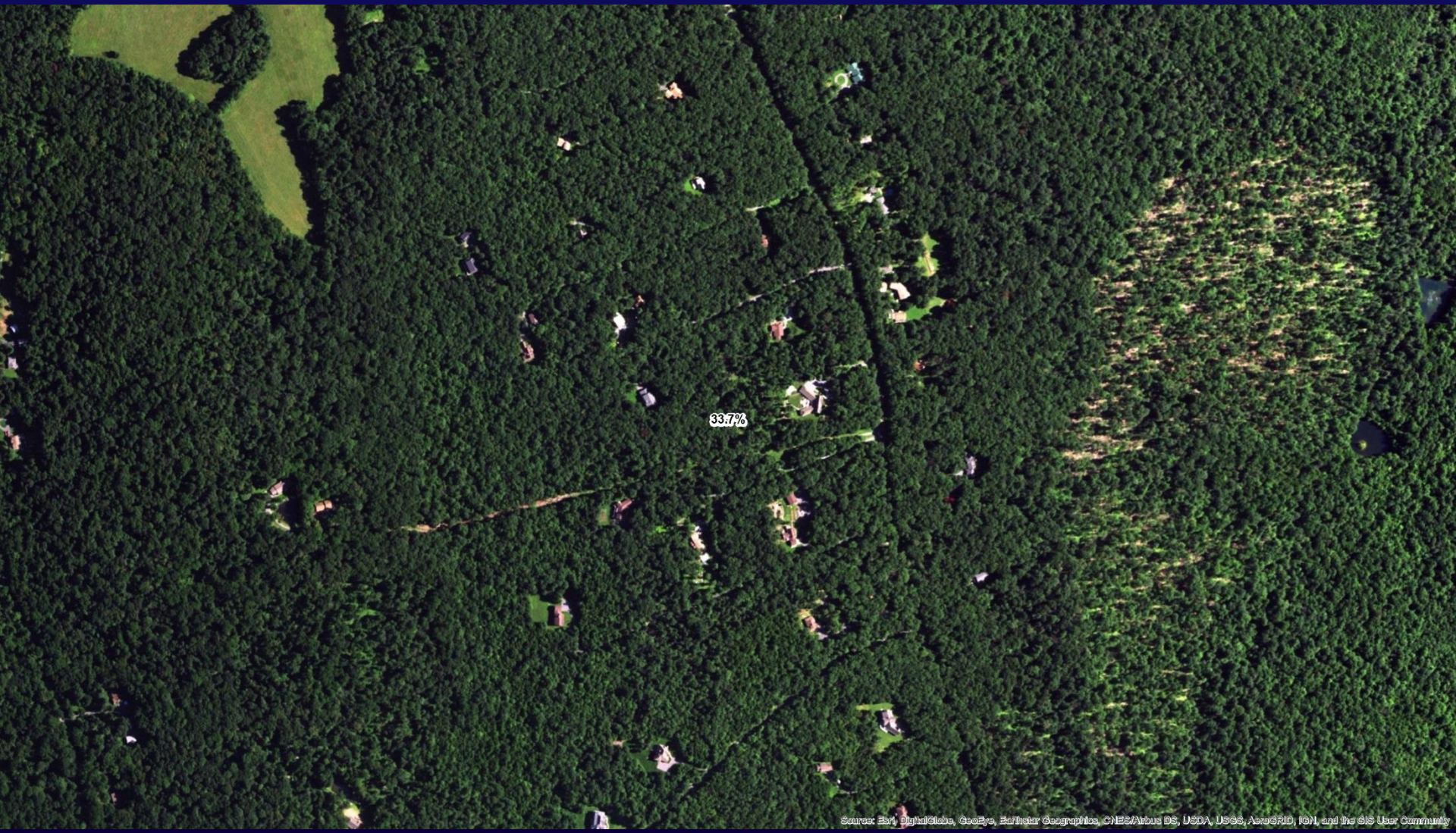
1. Refined the derivation of infill/ redevelopment proportions.
   - Coded the process (100% automated)
   - Expanded areas where infill might occur
   - Developed separate estimates for residential and commercial areas

2. Corrected misinterpretations of local zoning data (Fairfax, Prince William, Loudoun, and Montgomery (MD).

3. Consolidated spatial representation of urban areas.

4. Refined post-processing of land use to avoid preferential conversion of farmland to impervious cover. Perforated forest developments still allowed.

What are perforated forest developments?



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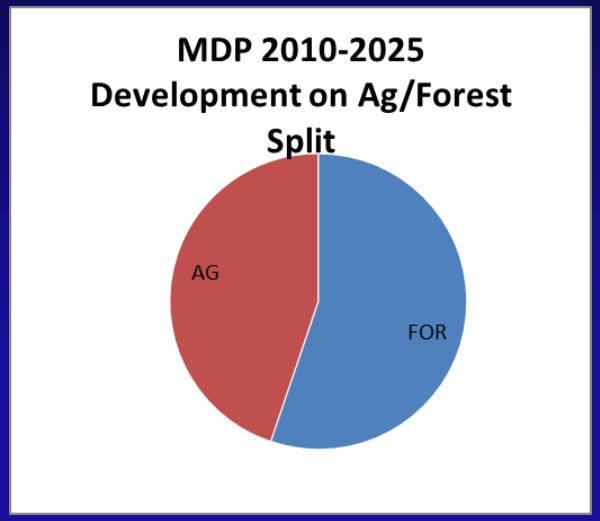
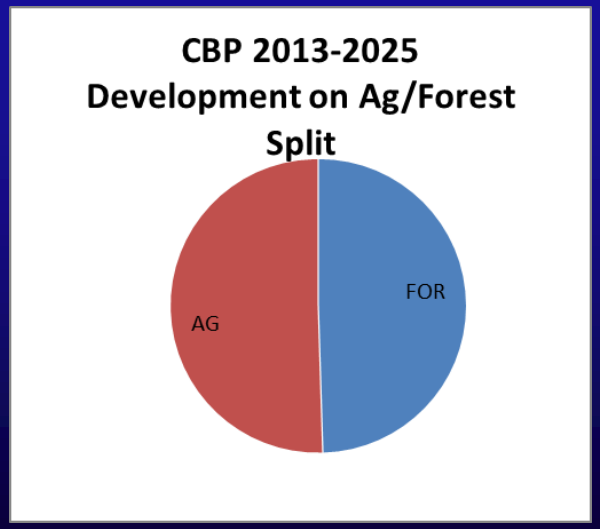
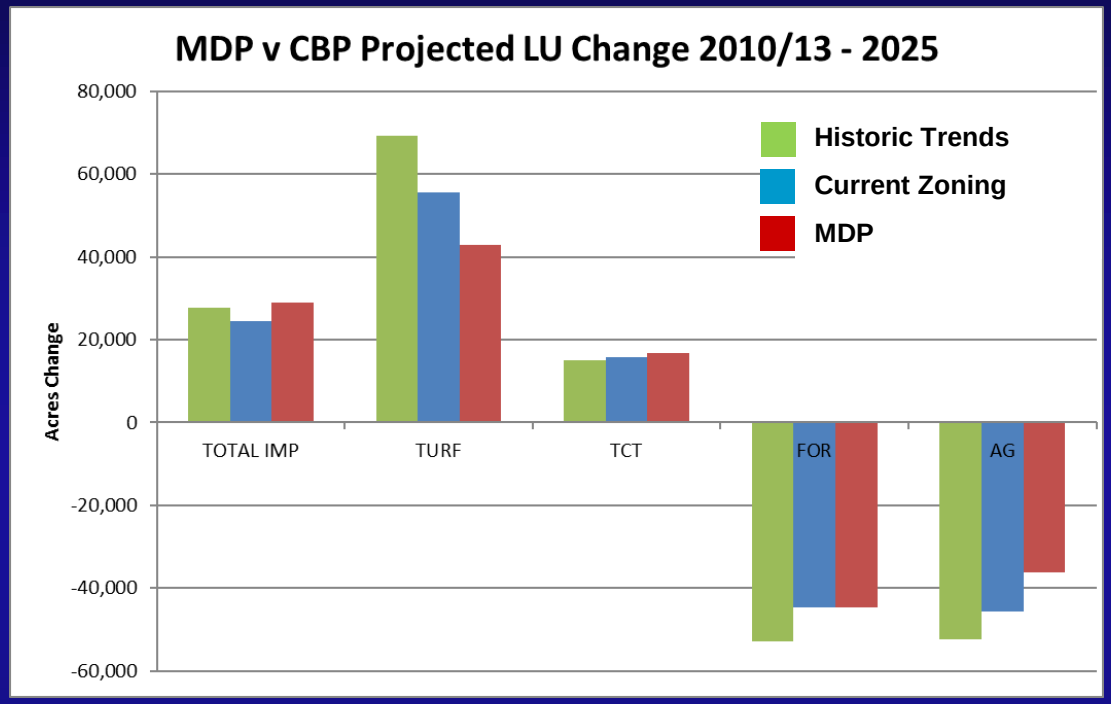
“Current Zoning” vs MDP Growth Model







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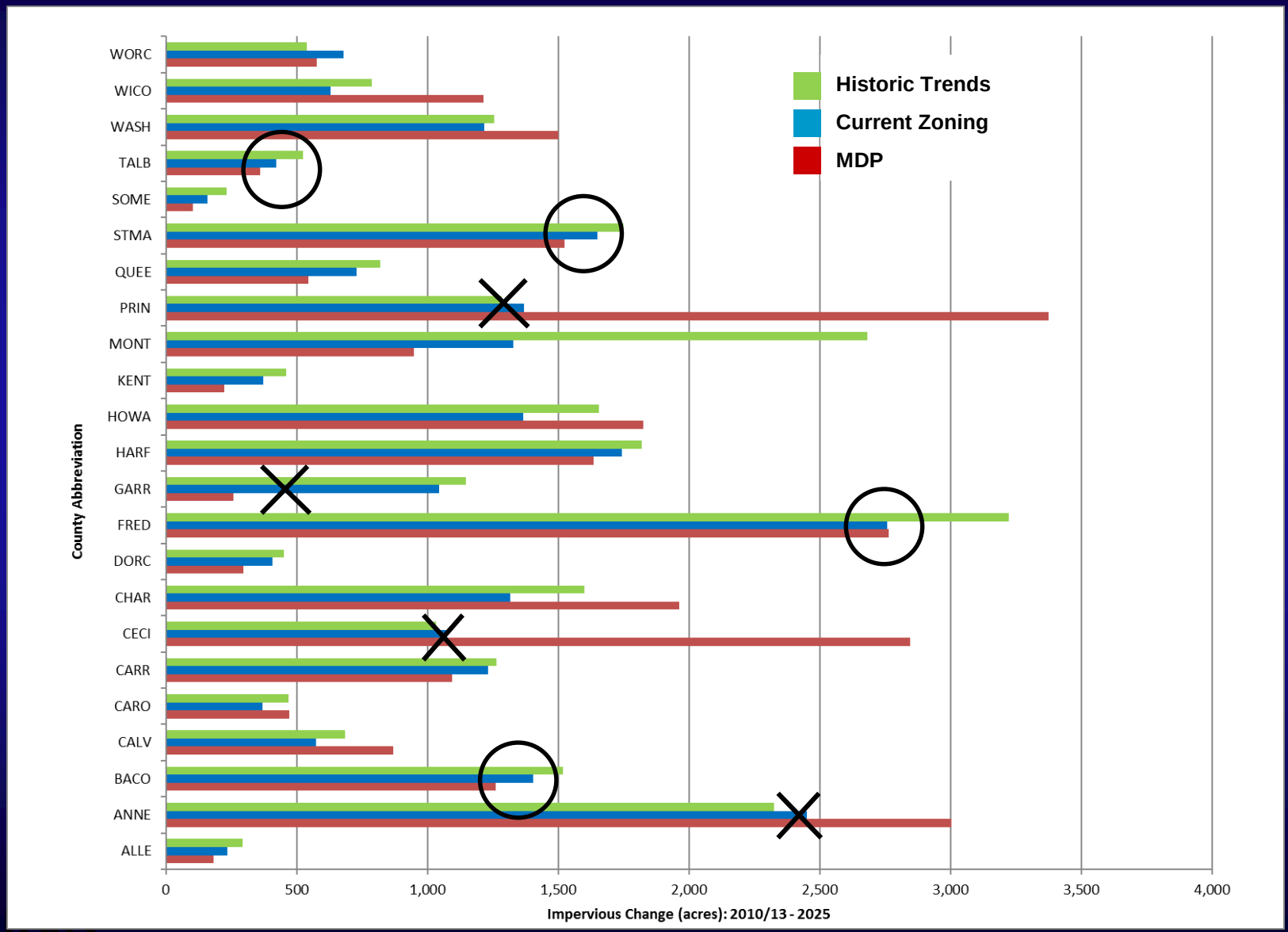
Forecasted Impervious Surface Change, 2010/13 - 2025



Updated/ Automated Infill Methods

1. **Define Infill universe.**
   a) Primary =
      - census blocks (2010) in census places (2015) and urban areas/clusters (2000)

   b) Secondary =
      - census blocks (2010) with some housing or employment &
      - % impervious >= mean % impervious of primary infill blocks

2. **Assess infill/redevelopment.**
   a) Estimate the minimum amount of development expected within an infill block based on the maximum expected housing and/or employment density for each block.

   b) Calculate the housing and/or employment equivalent to the quantity of under-detected development.

   c) Estimate proportion of housing and/or employment change that is infill for all census block groups and counties.

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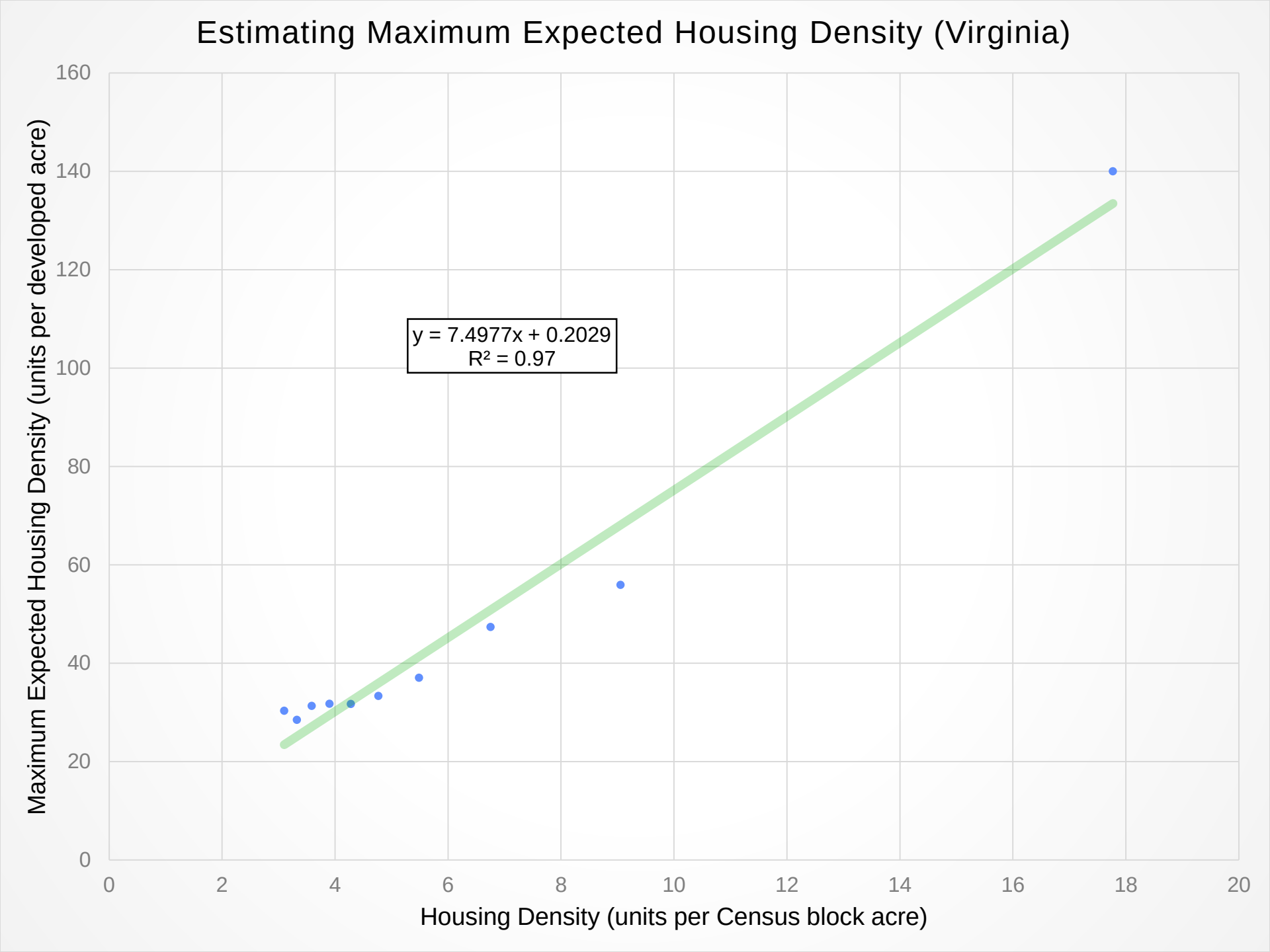
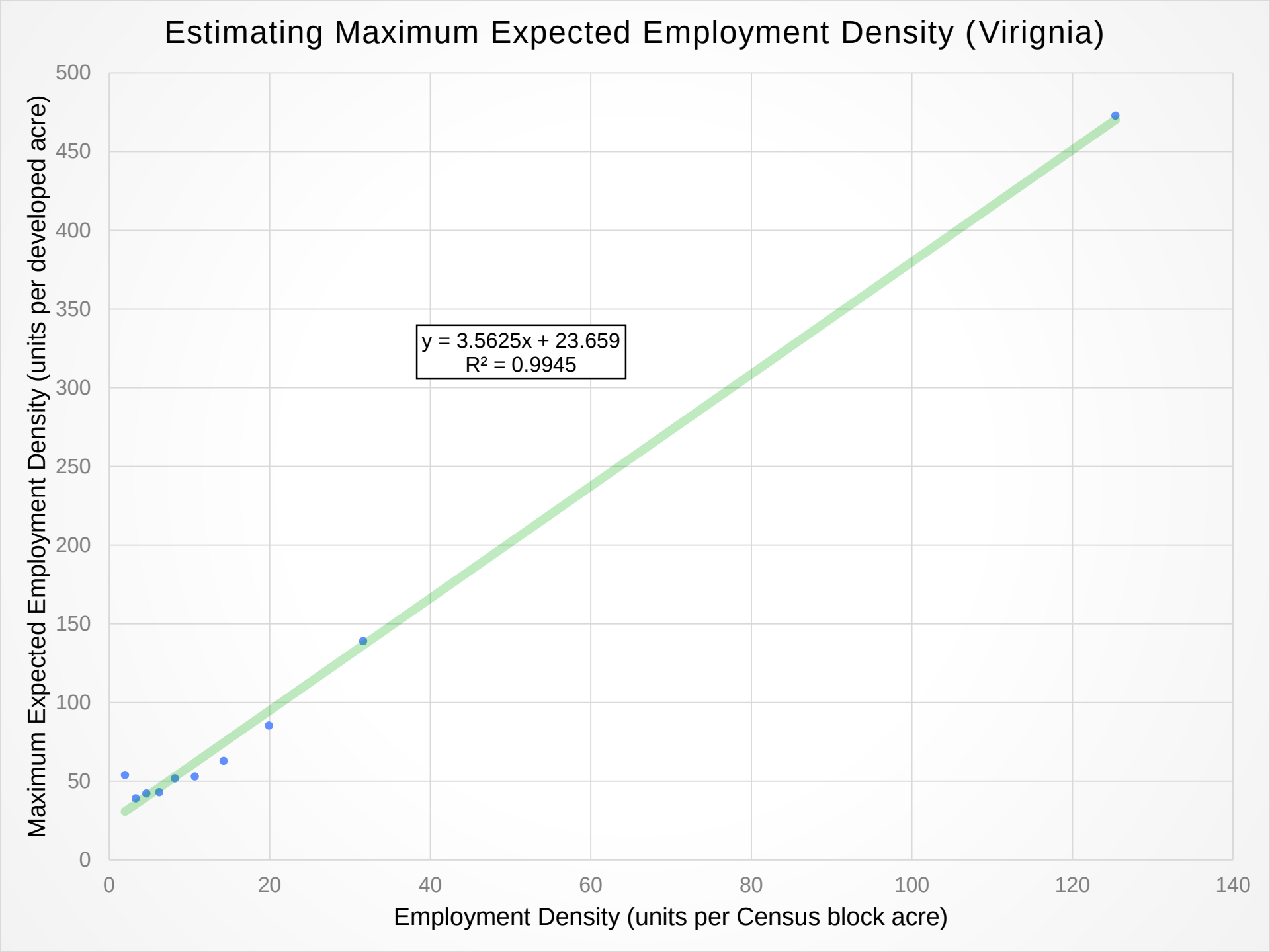
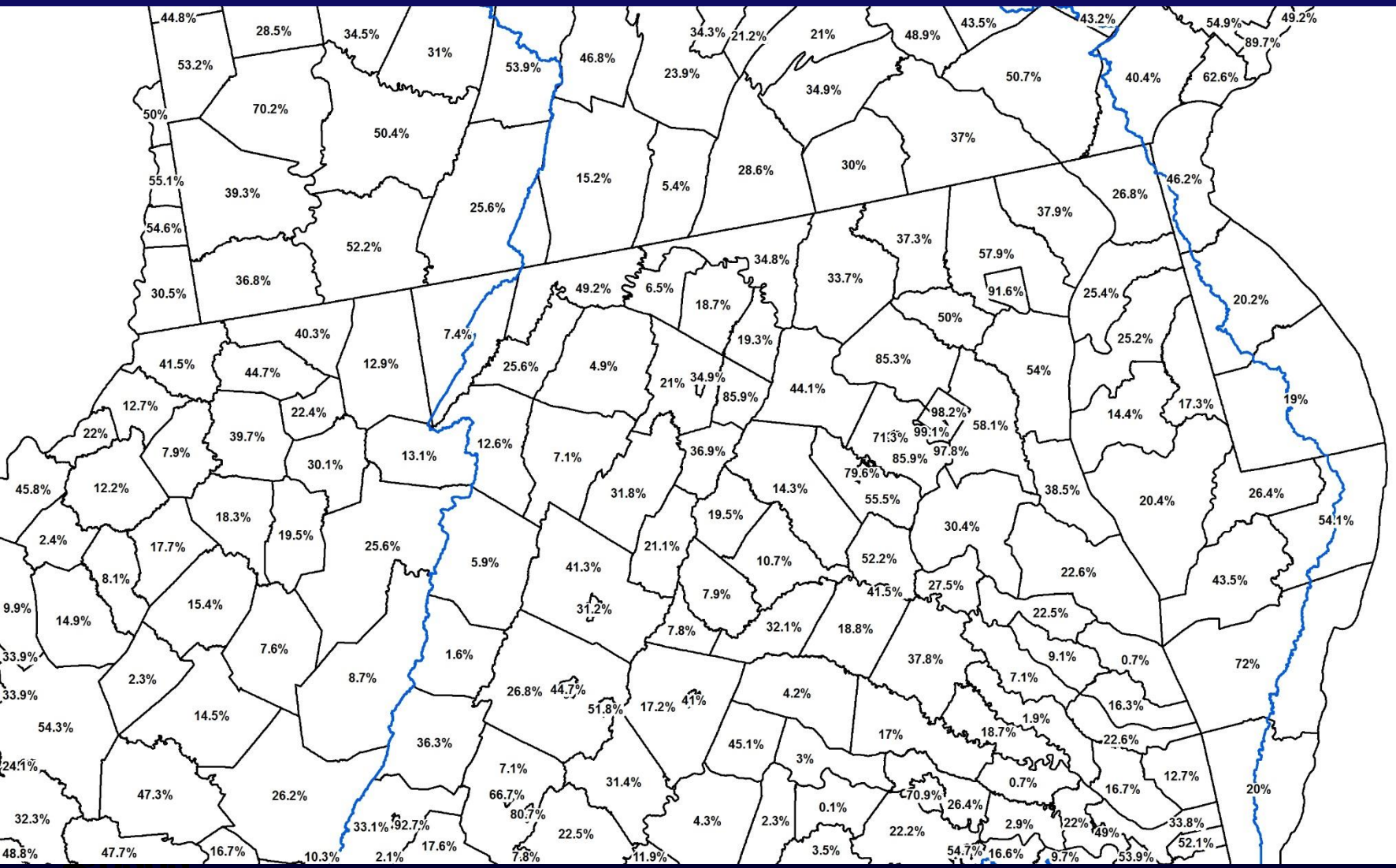
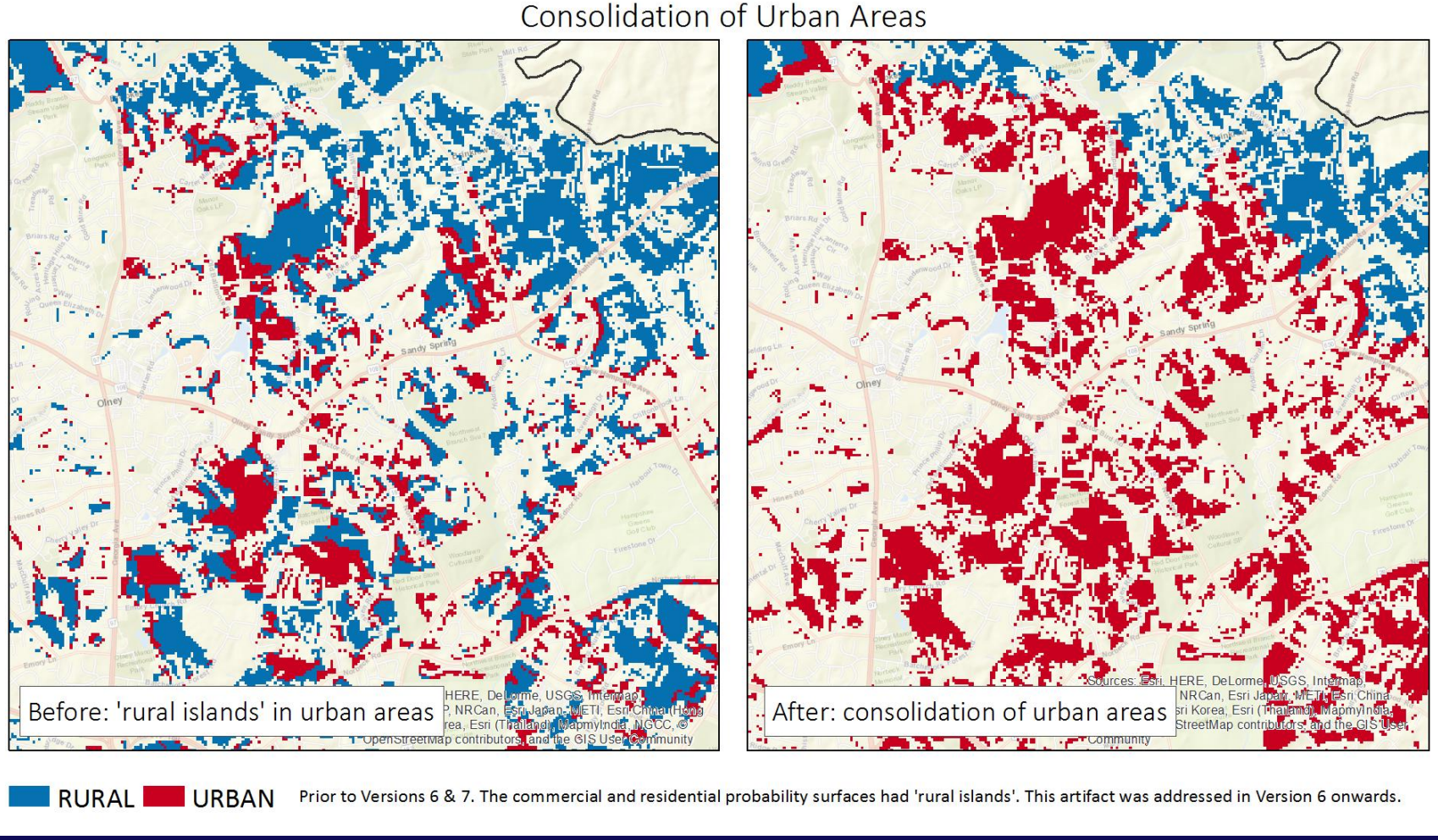

Estimating Maximum Expected Housing Density (Virginia)
Maximum Expected Housing Density (units per developed acre)
Housing Density (units per Census block acre)
y = 7.4977x + 0.2029
R² = 0.97
0
20
40
60
80
100
120
140
160
0
2
4
6
8
10
12
14
16
18
20


Estimating Maximum Expected Employment Density (Virignia)
Maximum Expected Employment Density (units per developed acre)
Employment Density (units per Census block acre)
y = 3.5625x + 23.659
R² = 0.9945
0
50
100
150
200
250
300
350
400
450
500
0
20
40
60
80
100
120
140

Updated County-level Infill Proportions



Consolidated Urban Areas
(northern Montgomery County, MD)



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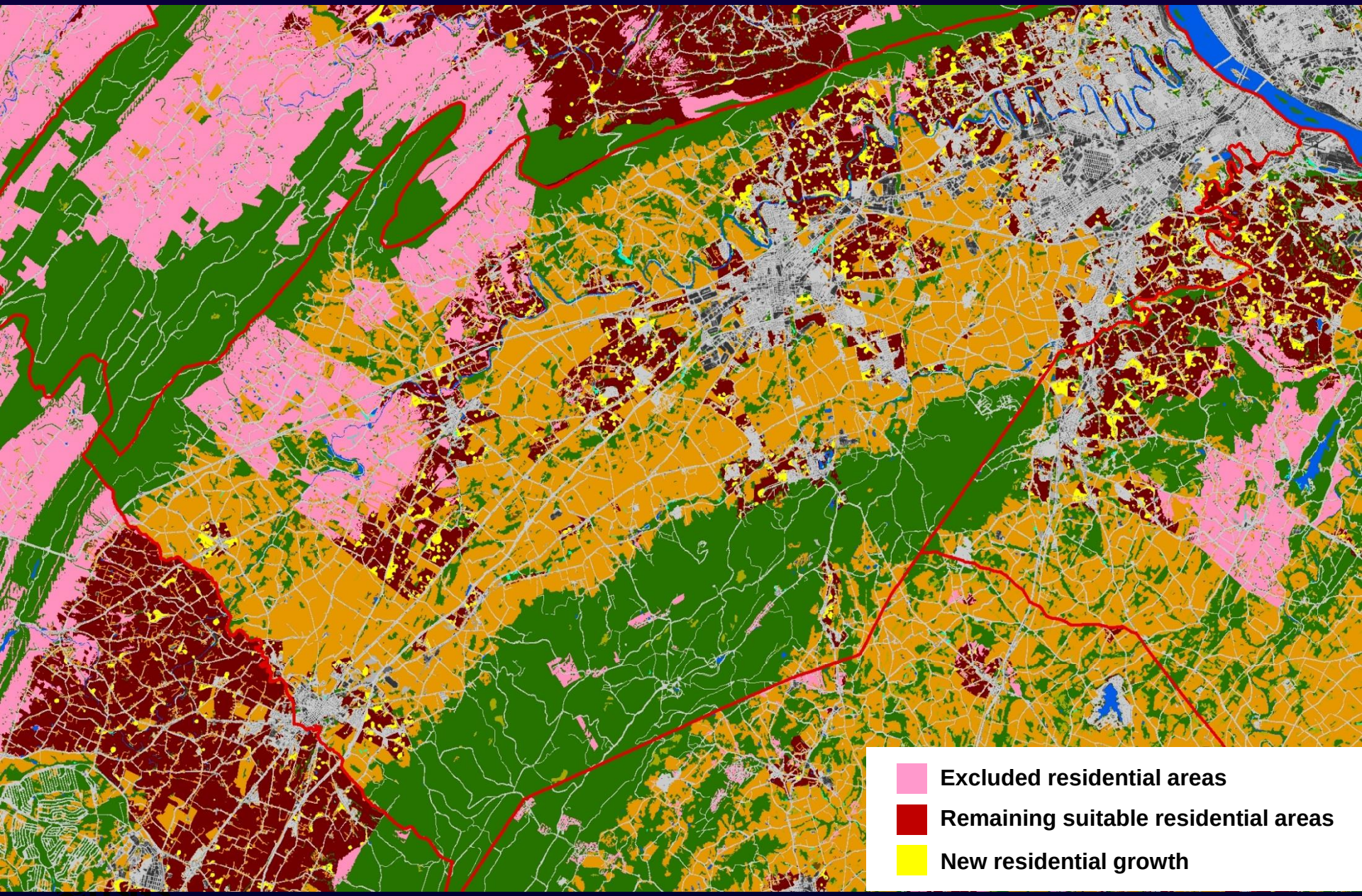
Proposed exclusion of ultra-rural areas



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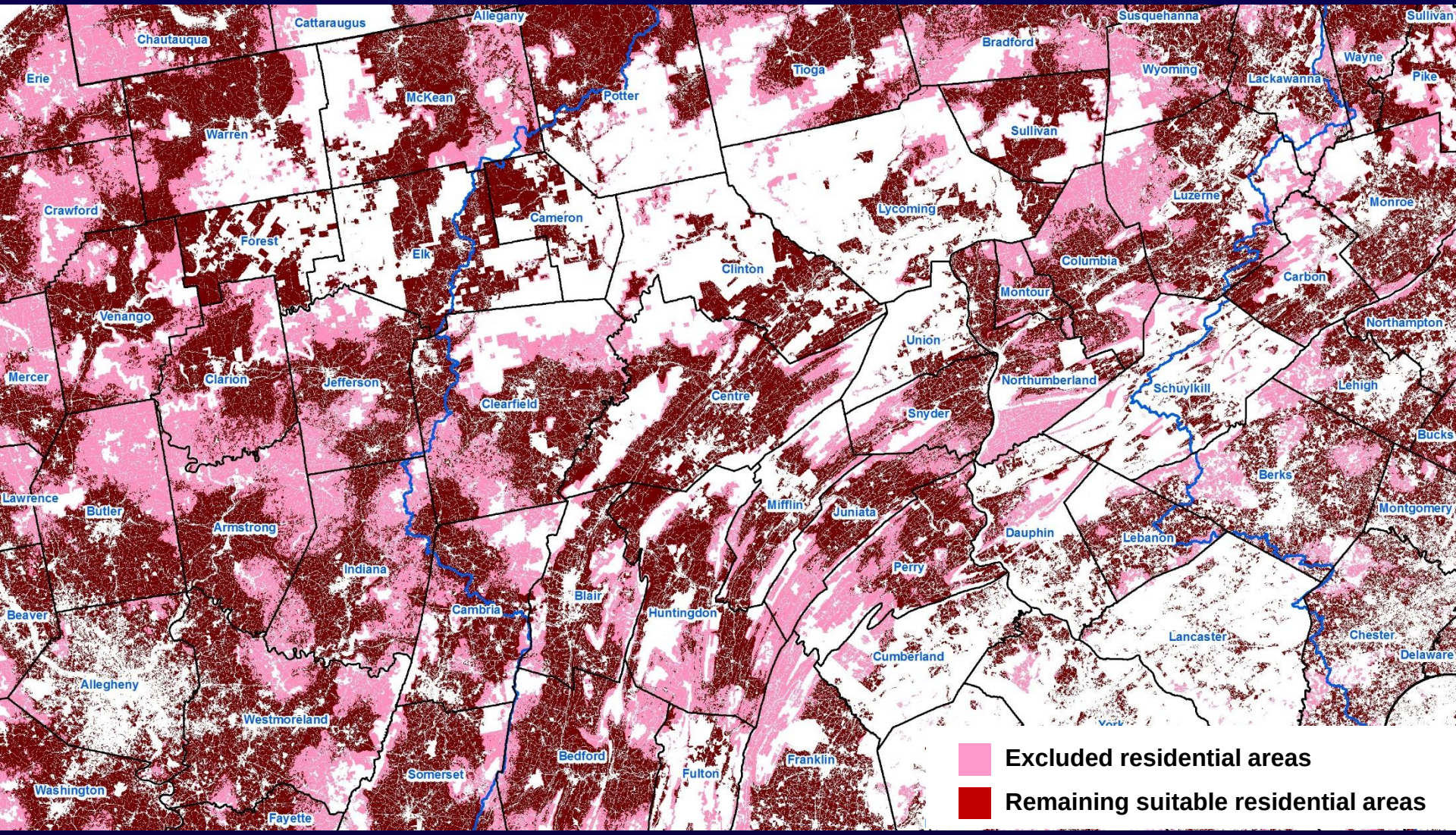

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State-Level Impacts of Excluding Ultra-Rural Areas

0.1% increase in development

1.5% decrease in farmland

1.9% increase in forest

New development is transferred from very low-density forested areas to low-moderate density farmland leading to slight decreases in impervious area but increases in turf grass because the predevelopment land is already in an herbaceous state.

If forest/scrub is the pre-developed state in low-density areas, turf grass is limited to a maximum of 0.5 acres/household composed of 0.25-acres turf plus 0.25-acres trees over turf if lot sizes >= 0.7 acres.

If farmland/barren is the pre-developed state in low-density areas, turf grass is limited to a maximum of 5 acres/household if lot sizes >= 5.25 acres.

“Current Zoning” Scenario Review Expectations

1. **Are the general locations of future residential and commercial development (e.g., southeast side of town, along the I-95 corridor) displayed in the Phase 6 Viewer for your jurisdiction reasonable?**

If not, please provide one of the following:

- County-wide GIS zoning data with an added CBP zoning code:
  - 0 = no growth allowed
  - 1 = commercial/industrial development;
  - 2 = residential development;
  - 3 = mixed/undetermined use (i.e., commercial and/or residential growth allowed); or
- A GIS dataset (polygon or raster) depicting areas unsuitable for development due to soils or other unique considerations. Note that slope, public ownership, and protection status are already considered in the CBLCM.

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“Current Zoning” Scenario Review Expectations

2. **Are the number of onsite septic systems estimated for your jurisdiction reasonable?**

   If not, please do one or more of the following:

   - Provide an estimate of the total number of onsite septic systems in your jurisdiction for our base year 2013; or

   - Examine the extent of our representation of sewer service areas in your jurisdiction (via the Phase 6 Viewer) and if they are incorrect, provide a polygon or raster dataset depicting the correct area served by wastewater treatment plants in your jurisdiction as of the year 2025; or

   - Provide a polygon or raster dataset depicting areas unsuitable for septic due to soil or other constraints. Areas deemed unsuitable for septic will be excluded from future development unless they fall within designated sewer service areas.

“Conservation Plus” Scenario 2025-2100

- Increase infill/ redevelopment rates by X% per decade?
- Upzone urban areas and downzone rural areas by X% per decade?
- Protect all FEMA 100-year floodplains and frequently flooded soils?
- Protect all NWI and state designated or potential wetlands?
- Protect all CBP healthy watersheds?
- Prohibit growth on unsuitable soils X distance from sewer service areas?
- Prohibit growth in areas impacted by a 1m-rise in sea levels by 2100?
- Prohibit growth in areas subject to storm-surge inundation associated with a category 3 Hurricane.

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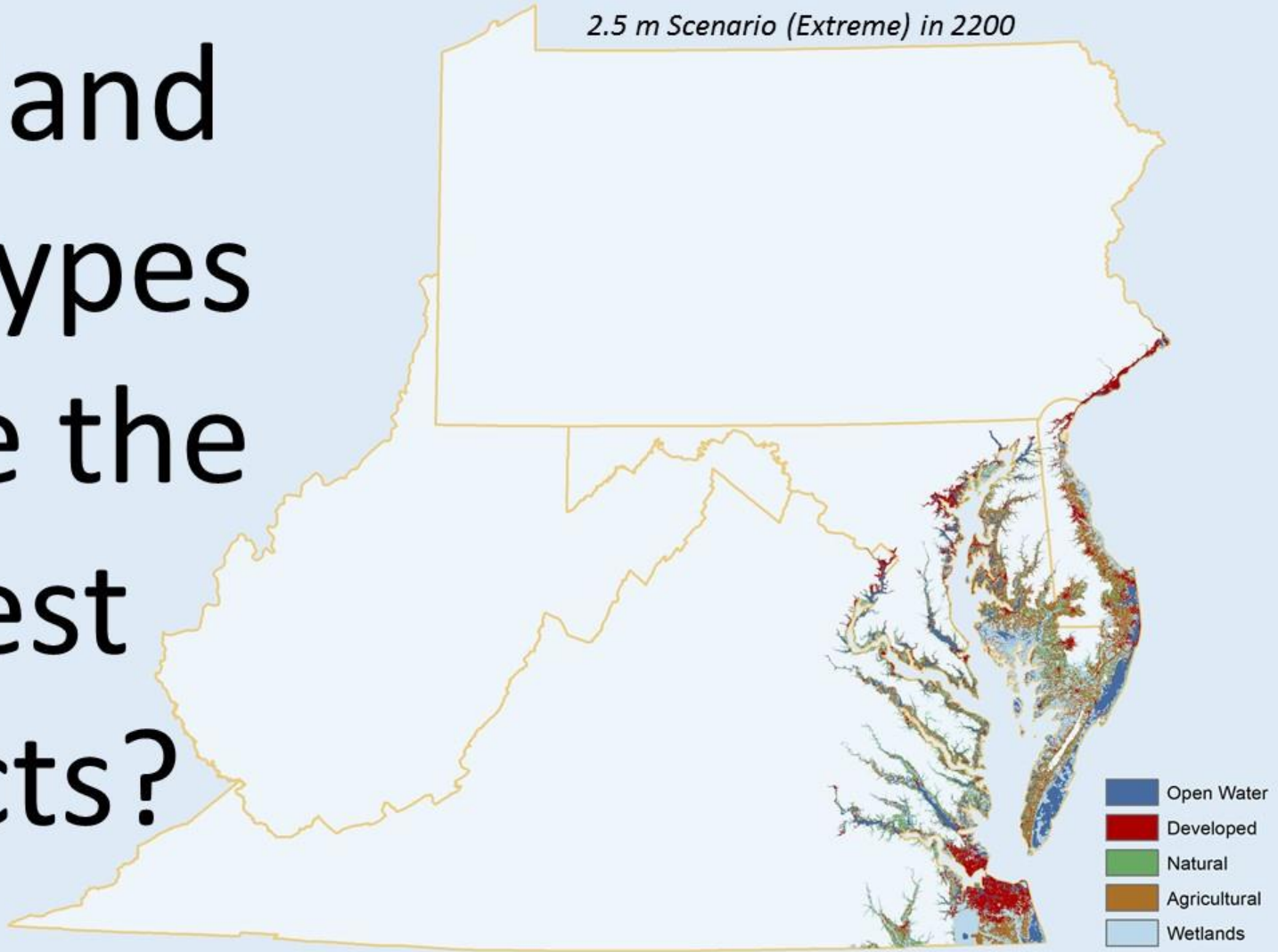
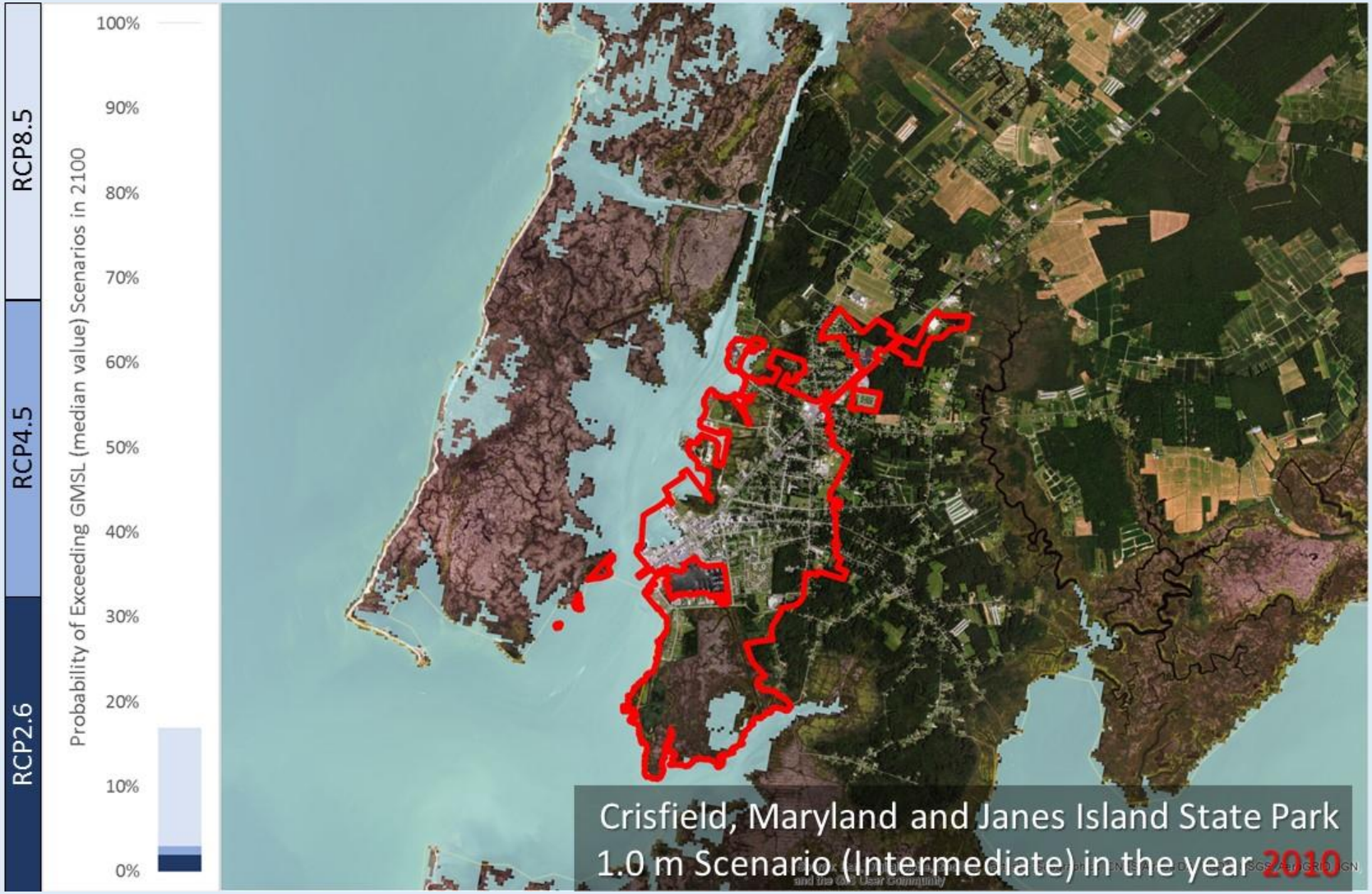
What land cover types will see the biggest impacts?



Slides Courtesy of Zoe Johnson, NOAA



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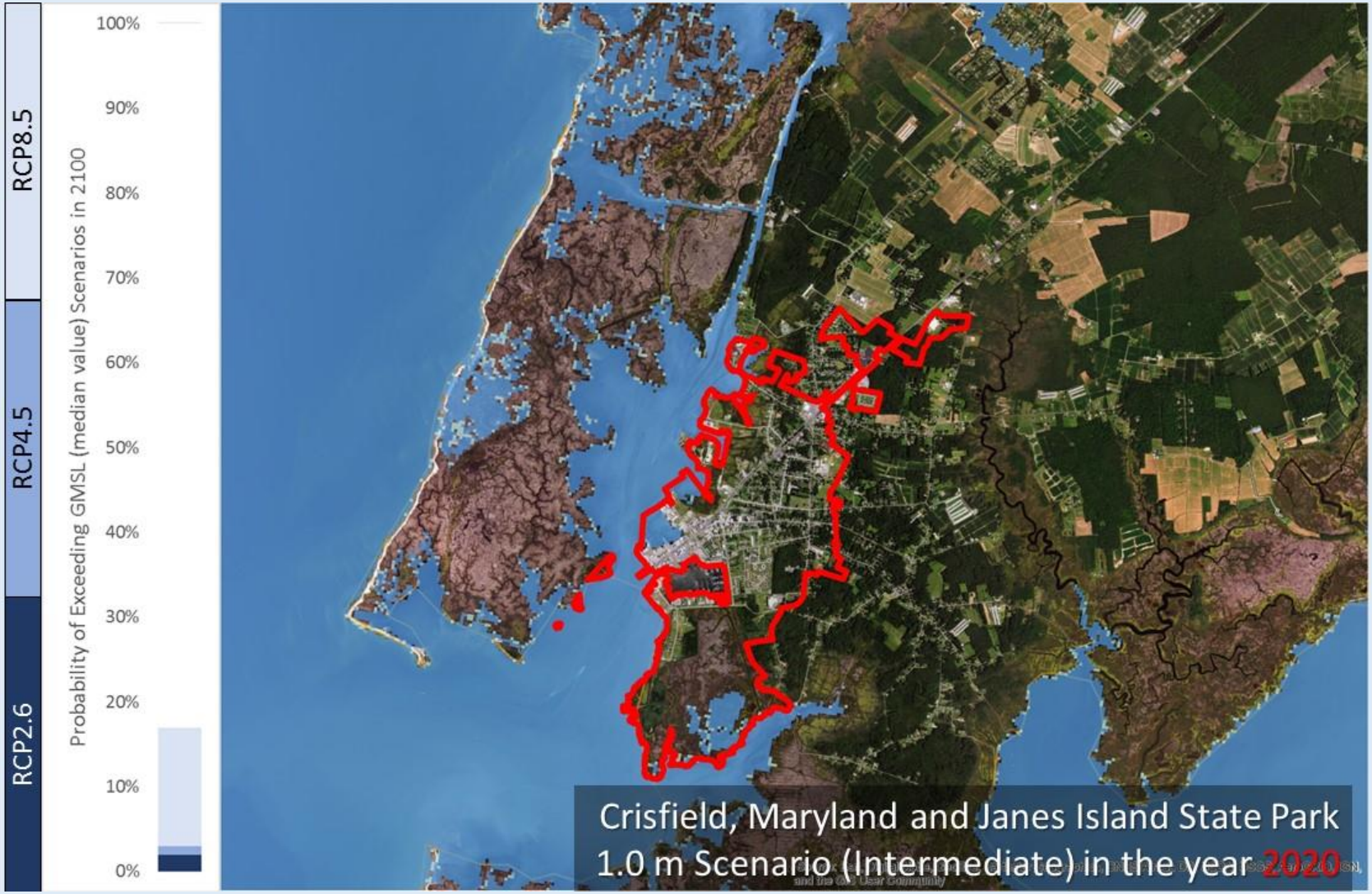

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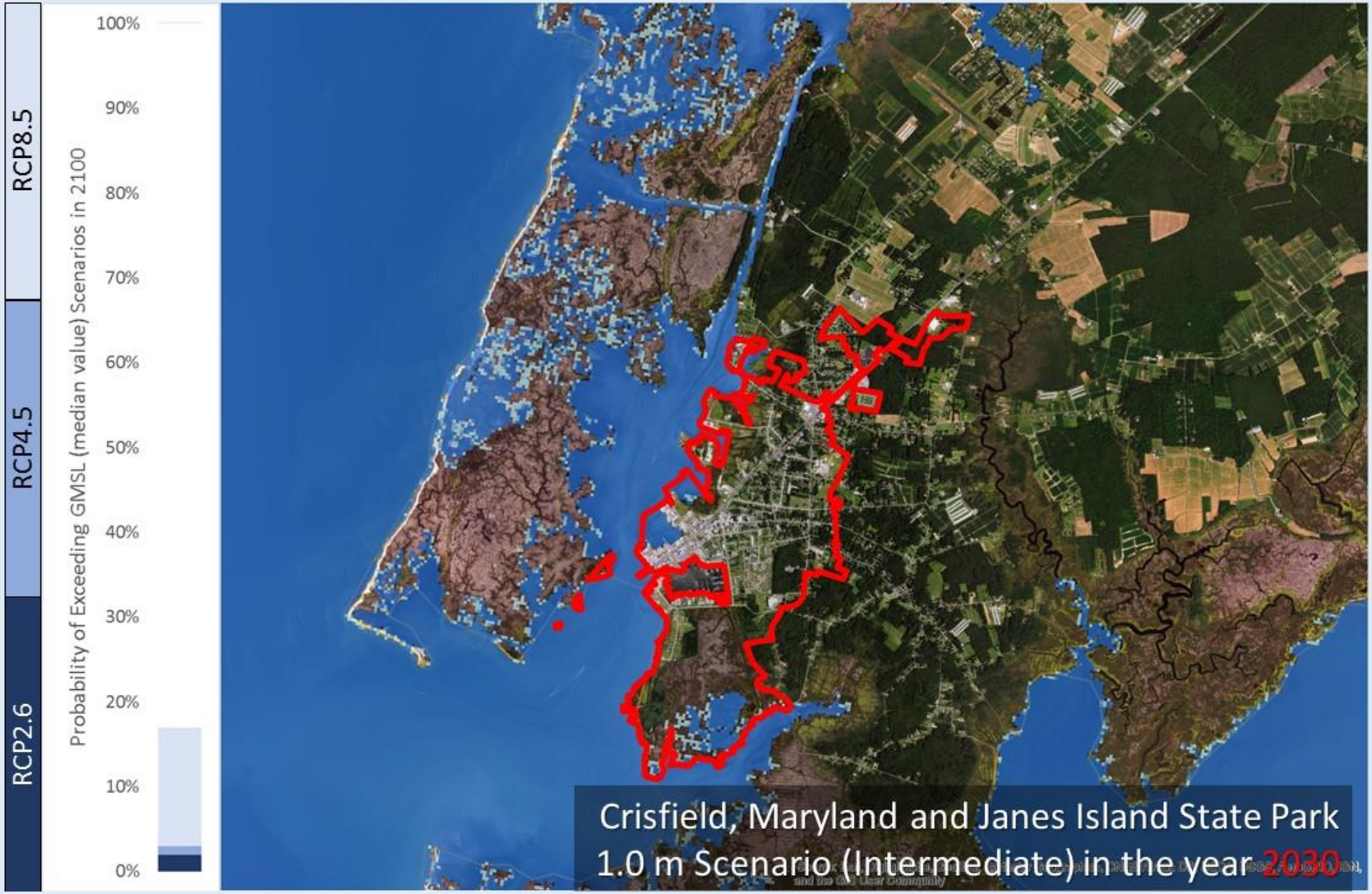

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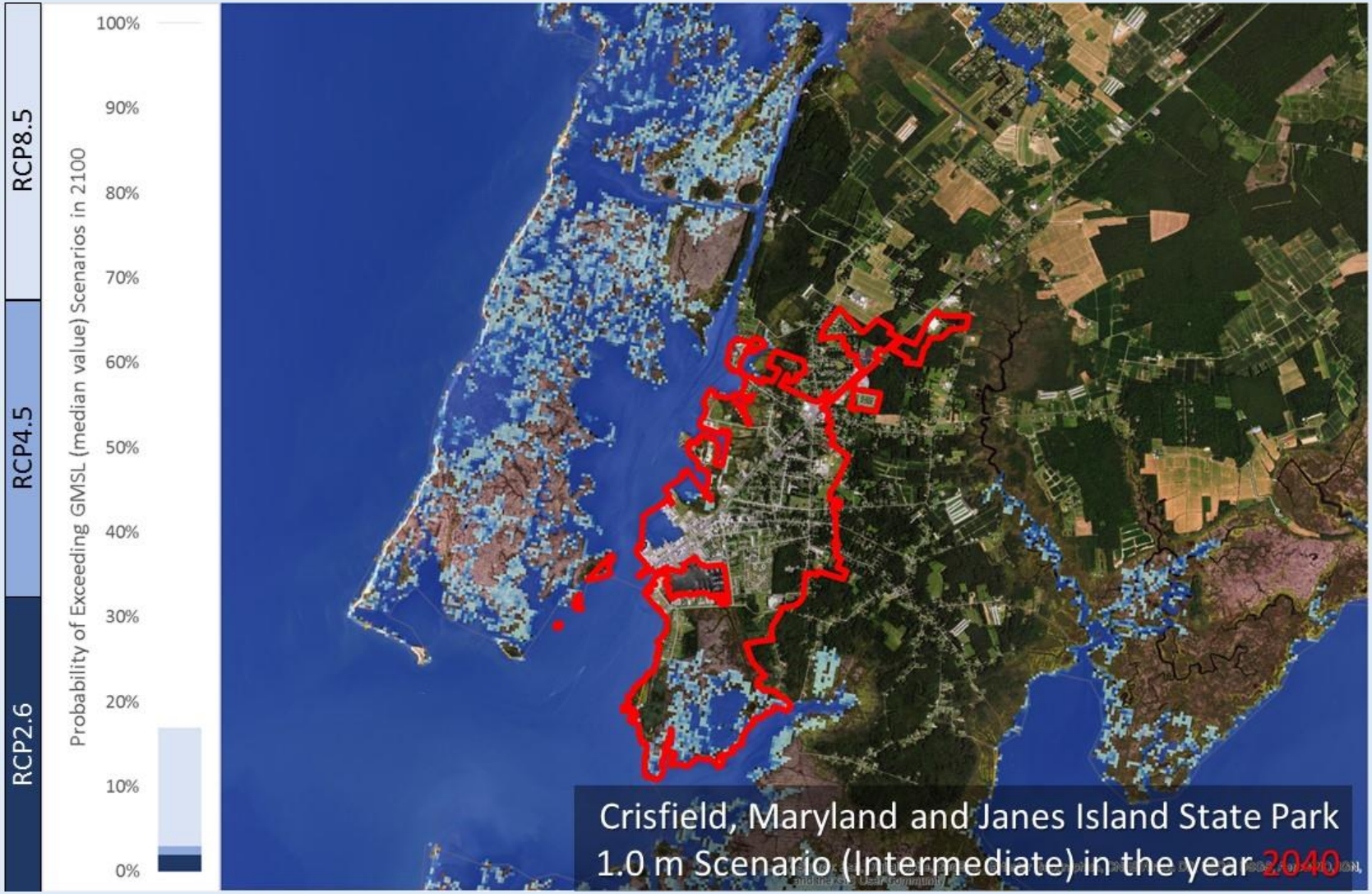

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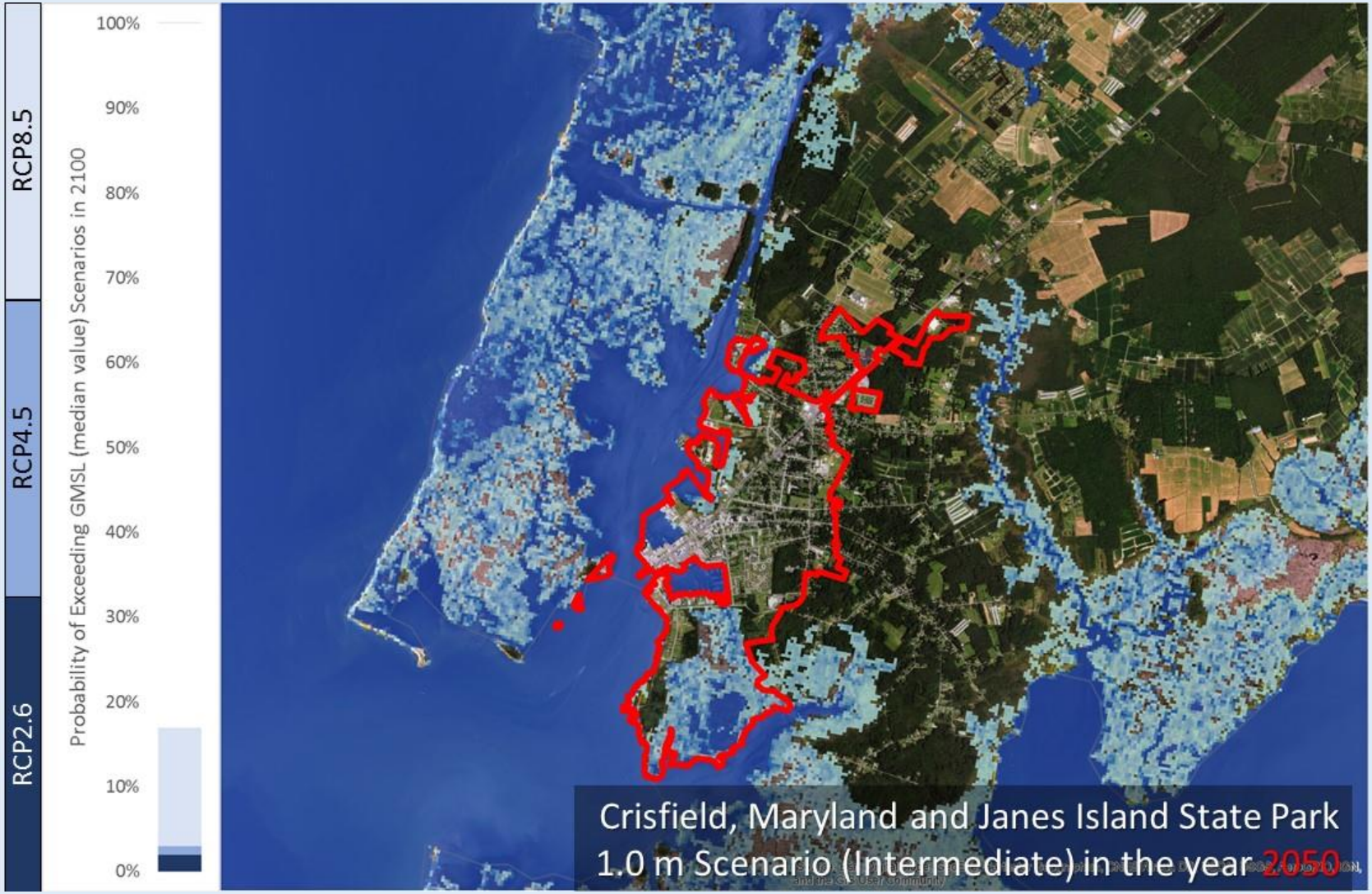

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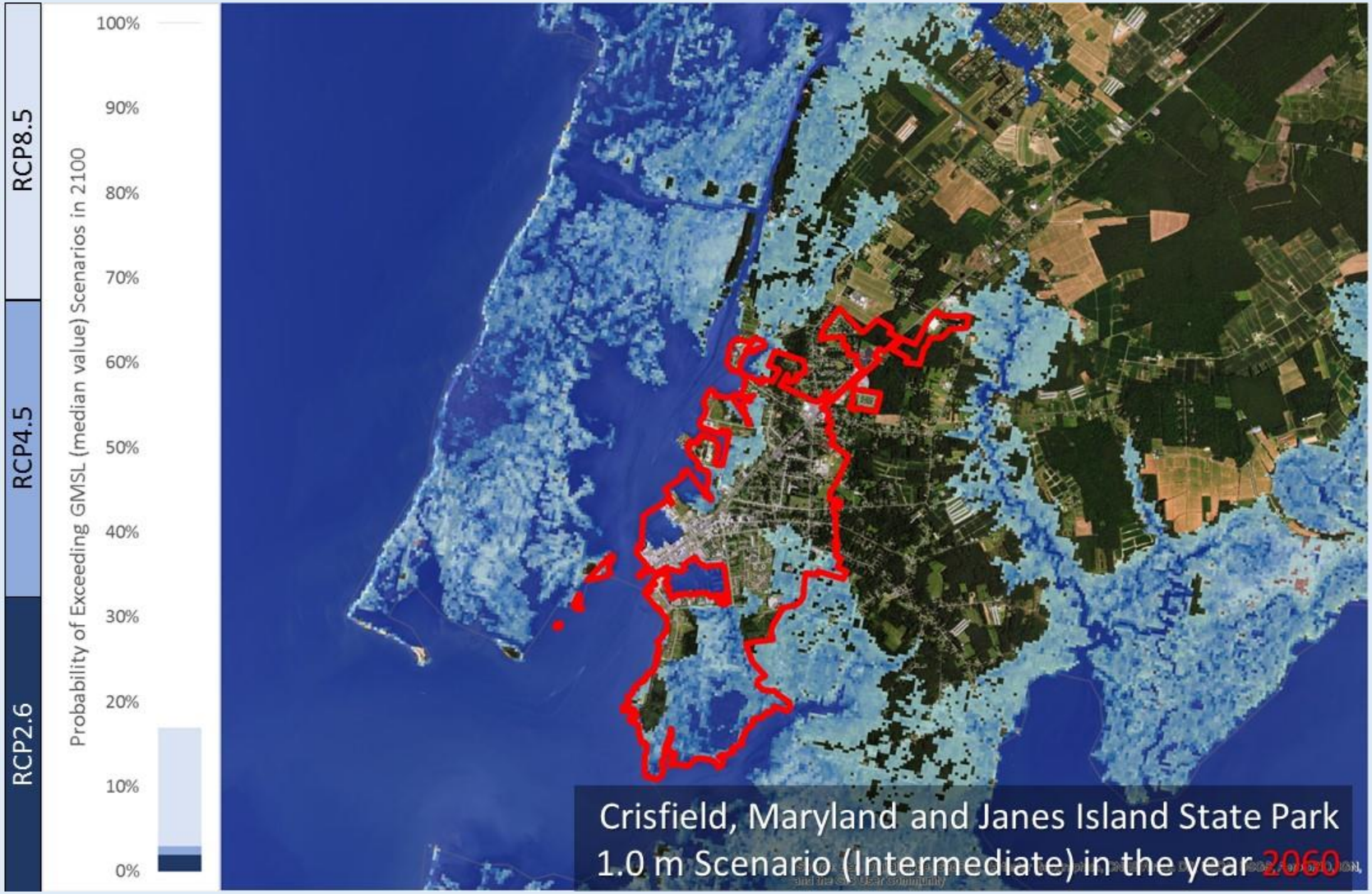

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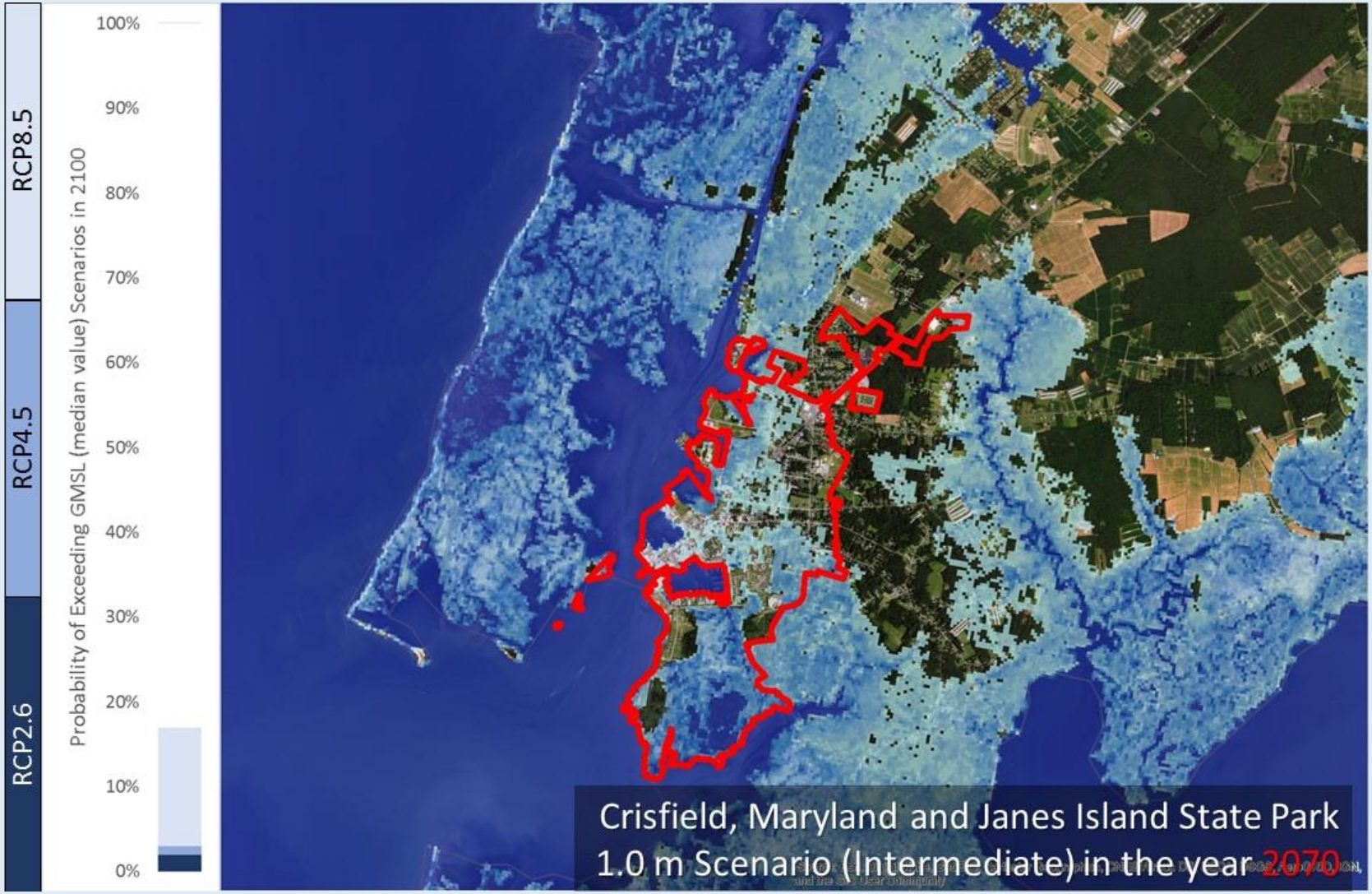

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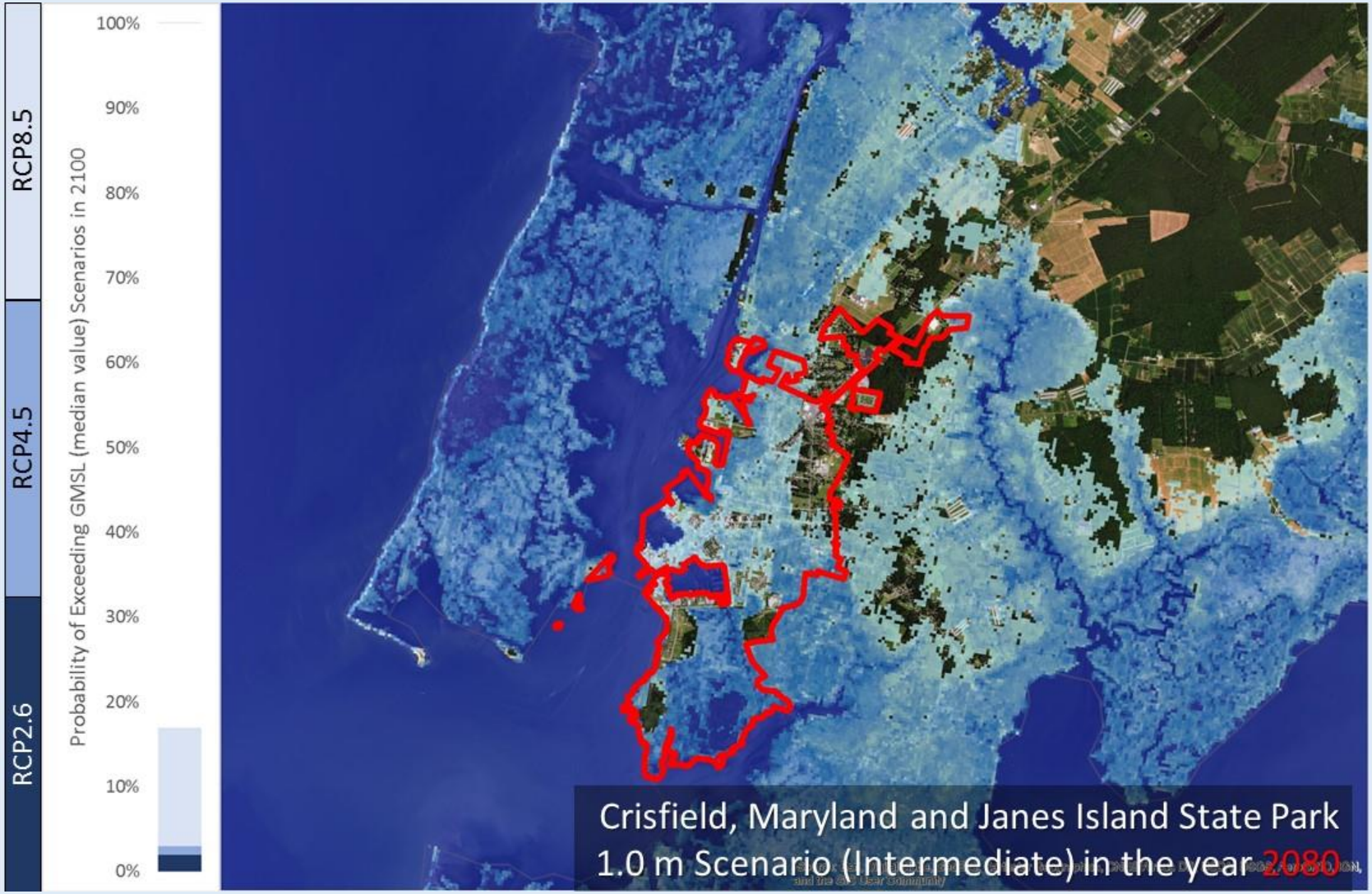

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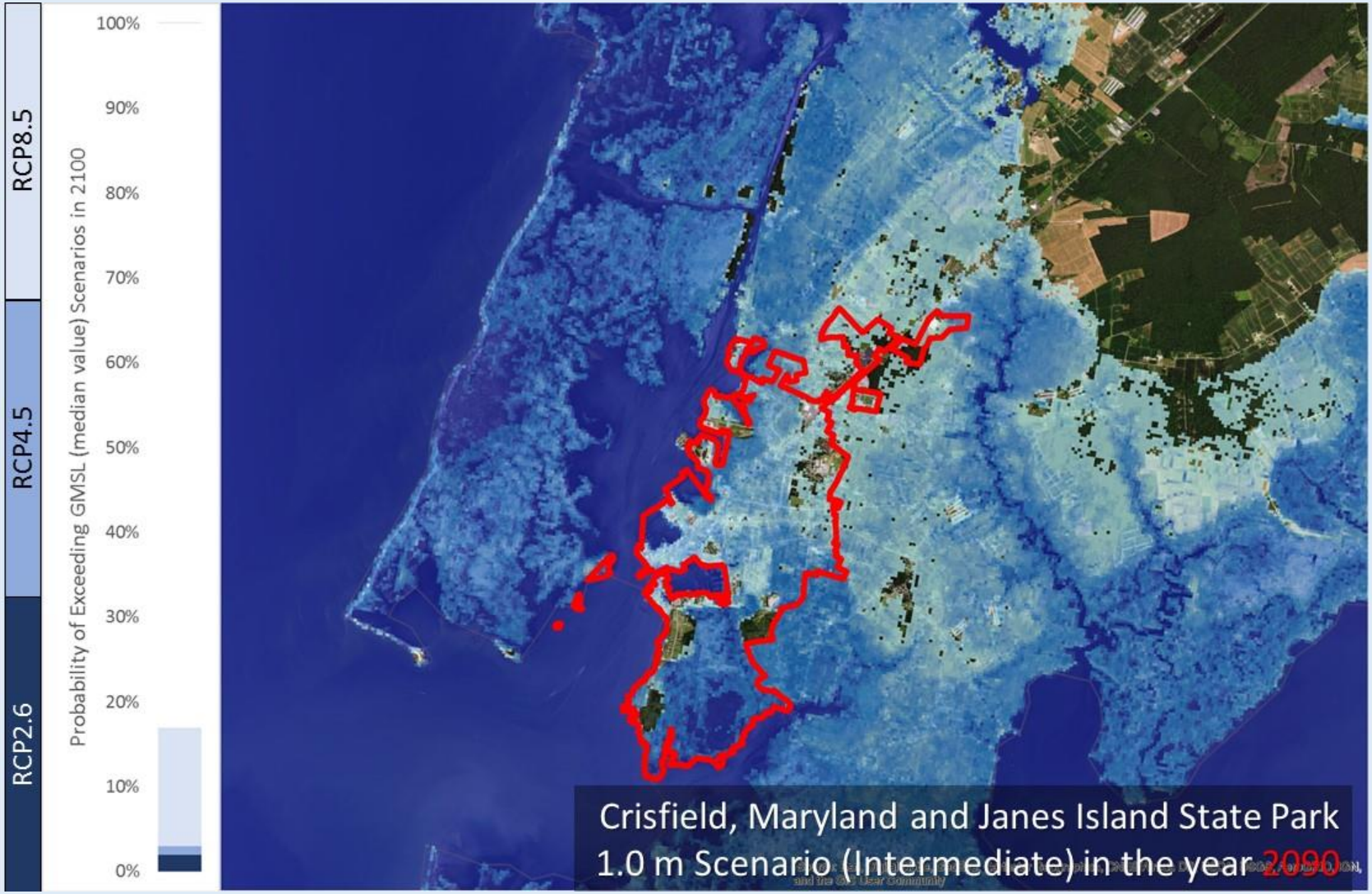

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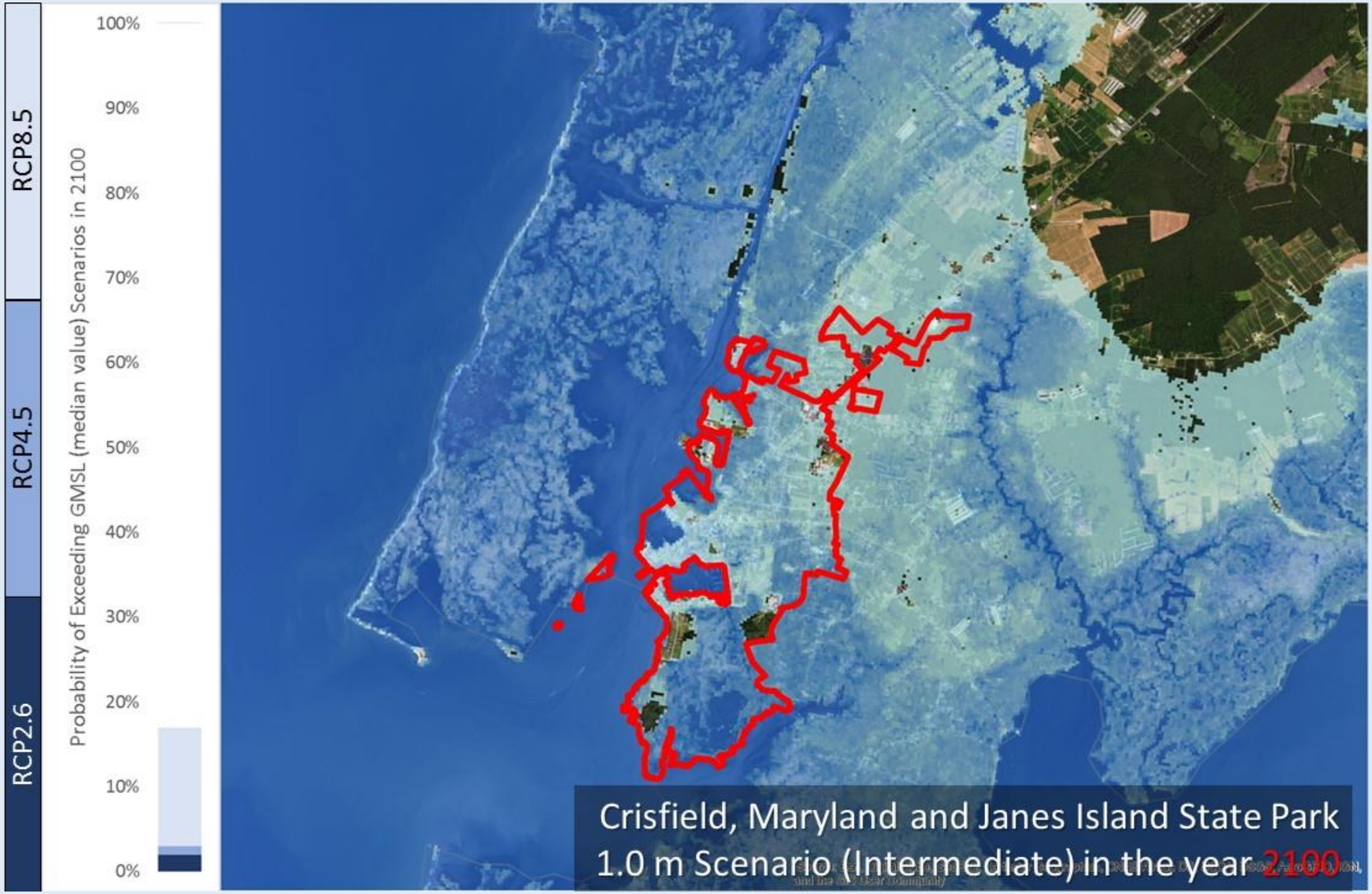

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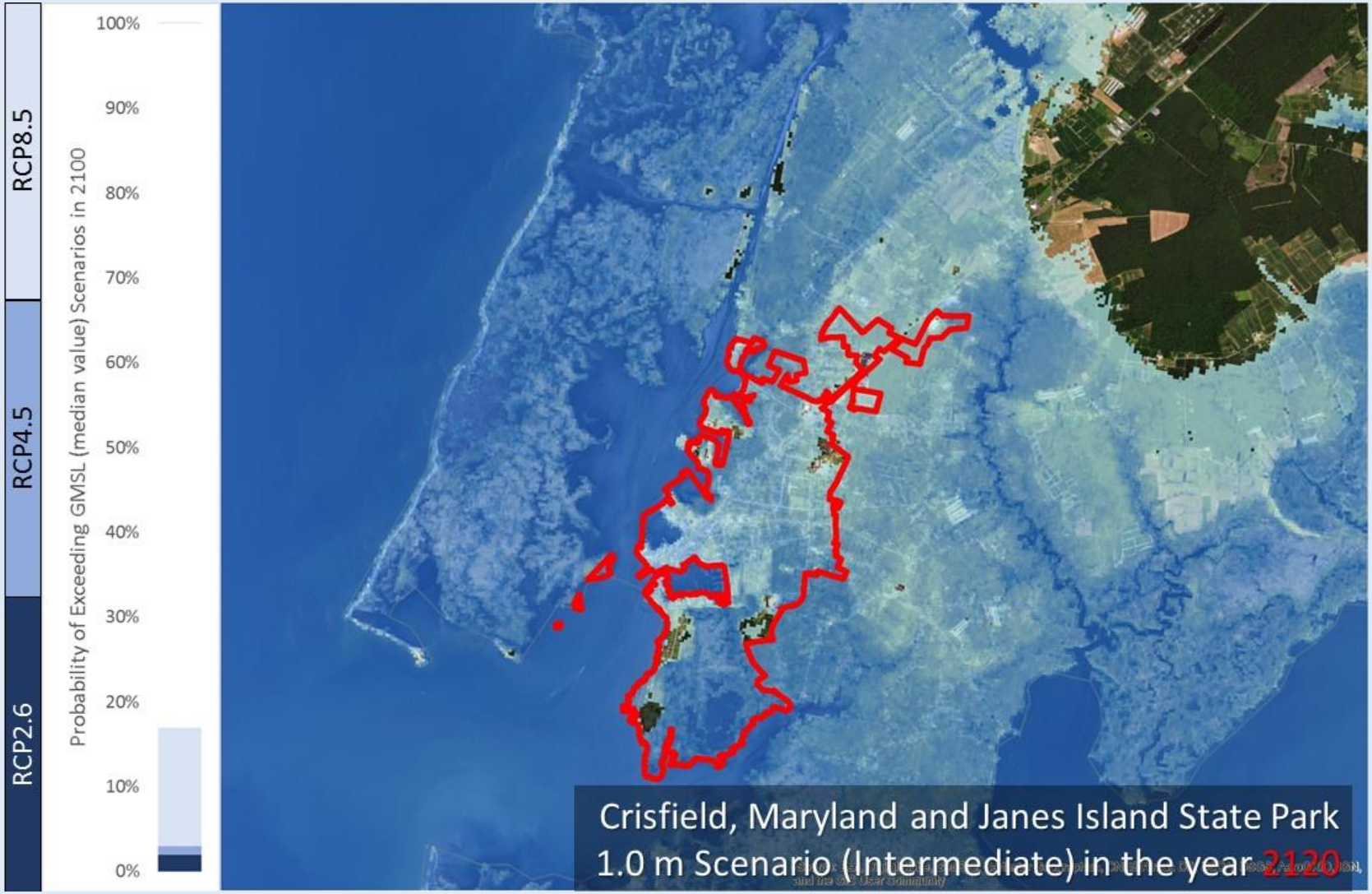

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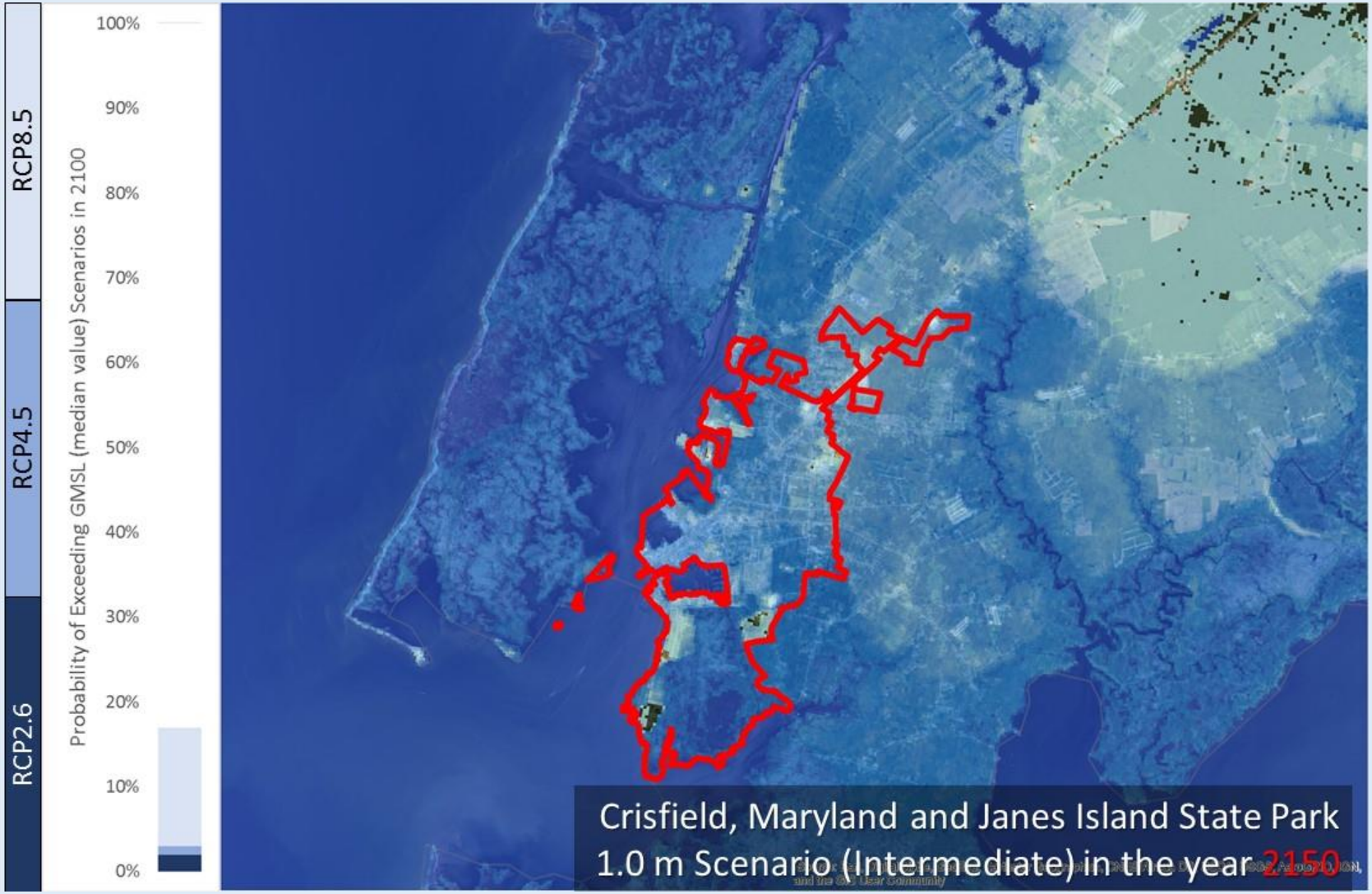

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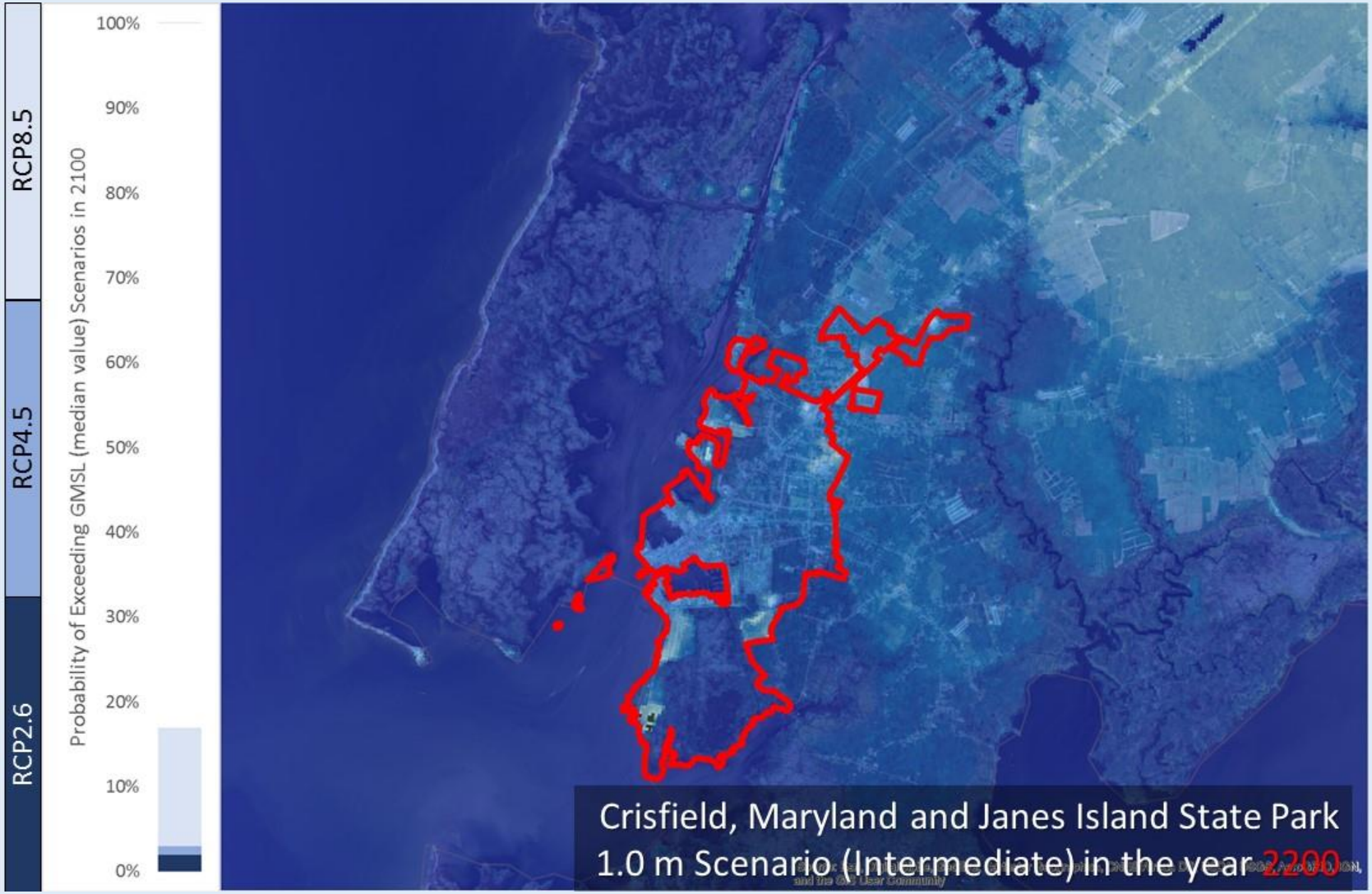

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Scenario Development Timeline

November 8th:
LUWG meeting

November 15th:
Draft-Final "Current Zoning" scenario delivered to Phase 6 watershed model

December 8th:
Comments due on "Current Zoning" scenario.

December 13th (1-3pm) :
LUWG meeting- Discuss comments on "Current Zoning" scenario, present draft "Conservation Plus" scenario.

December 19th:
PSC decision on use of 2025 land use to inform Phase III WIPs

December 22nd:
Comments due on draft "Conservation Plus" scenario.

January 15th:
Final "Current Zoning" and "Conservation Plus" scenarios delivered to Phase 6 watershed modeling team.

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