



# **Planning for Agriculture Through Land Cover Observations**

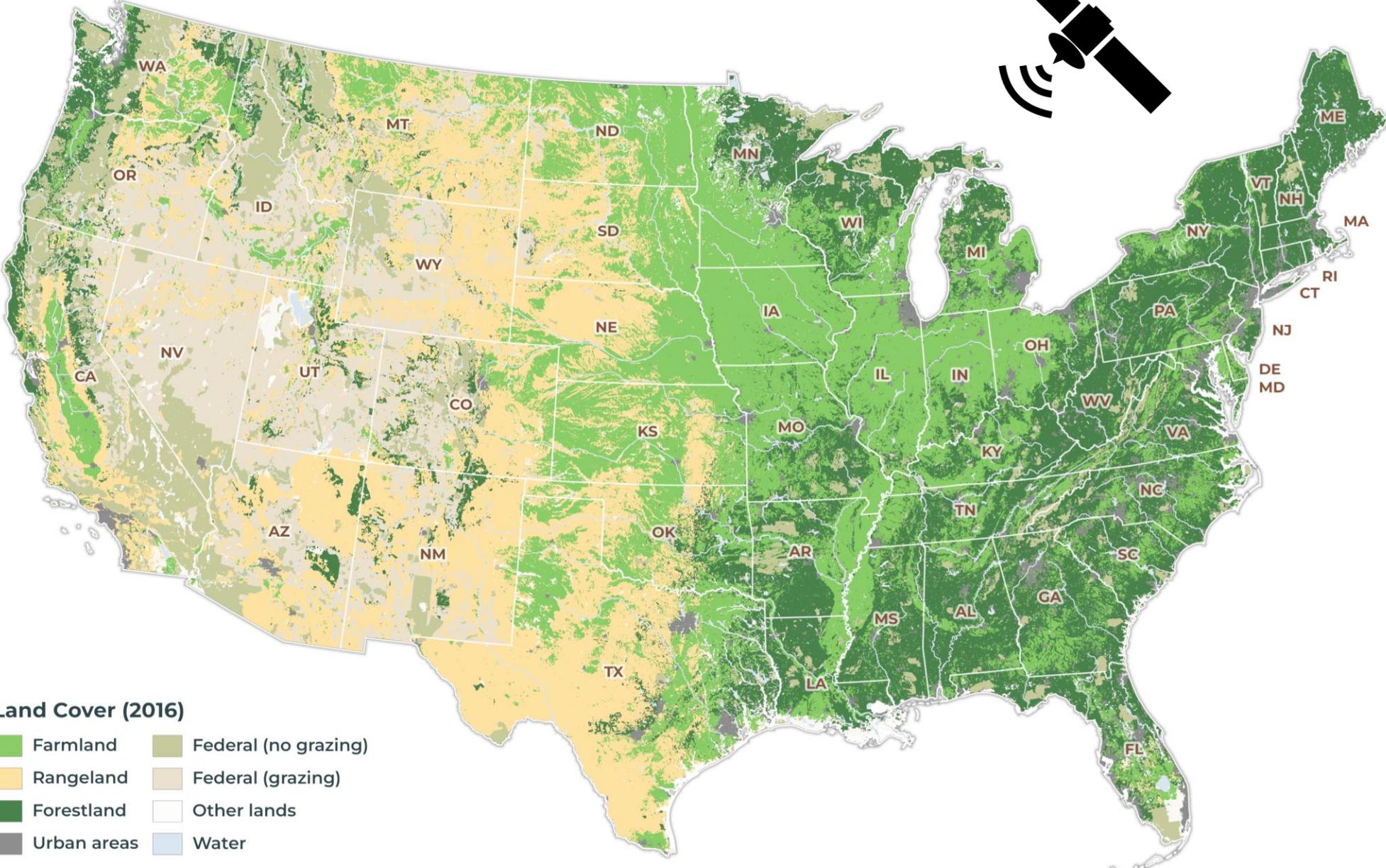
**Sam Smidt**

**National Director of Land Use and Protection Research  
American Farmland Trust  
[ssmidt@farmland.org](mailto:ssmidt@farmland.org)**



**American Farmland Trust**

# America's farmland is under threat of conversion.



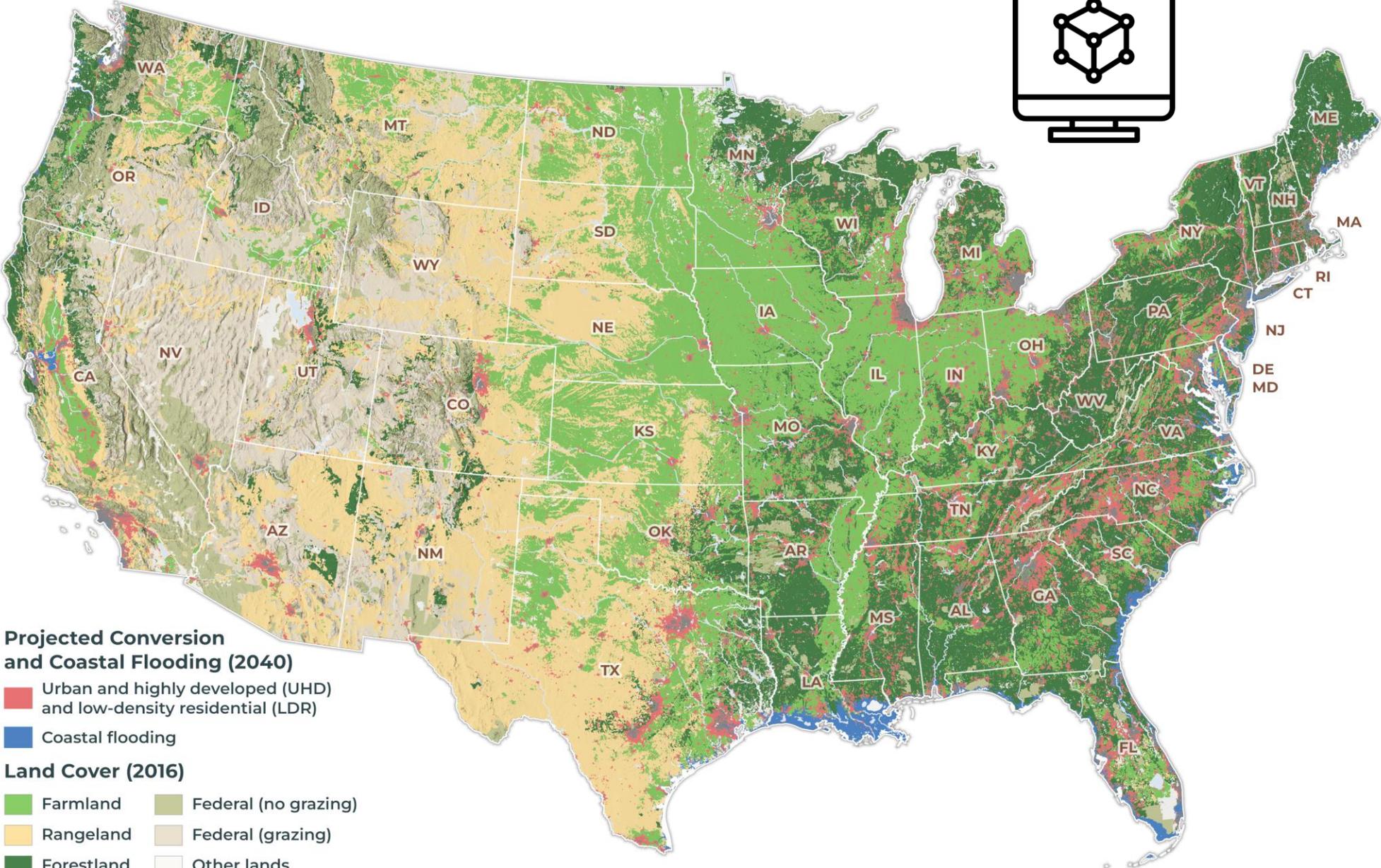
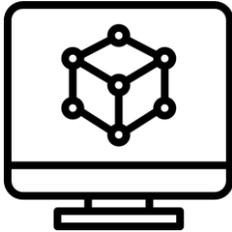
### Land Cover (2016)

- Farmland
- Rangeland
- Forestland
- Urban areas
- Federal (no grazing)
- Federal (grazing)
- Other lands
- Water

No Farms  
No Food



# America's farmland is under threat of conversion.

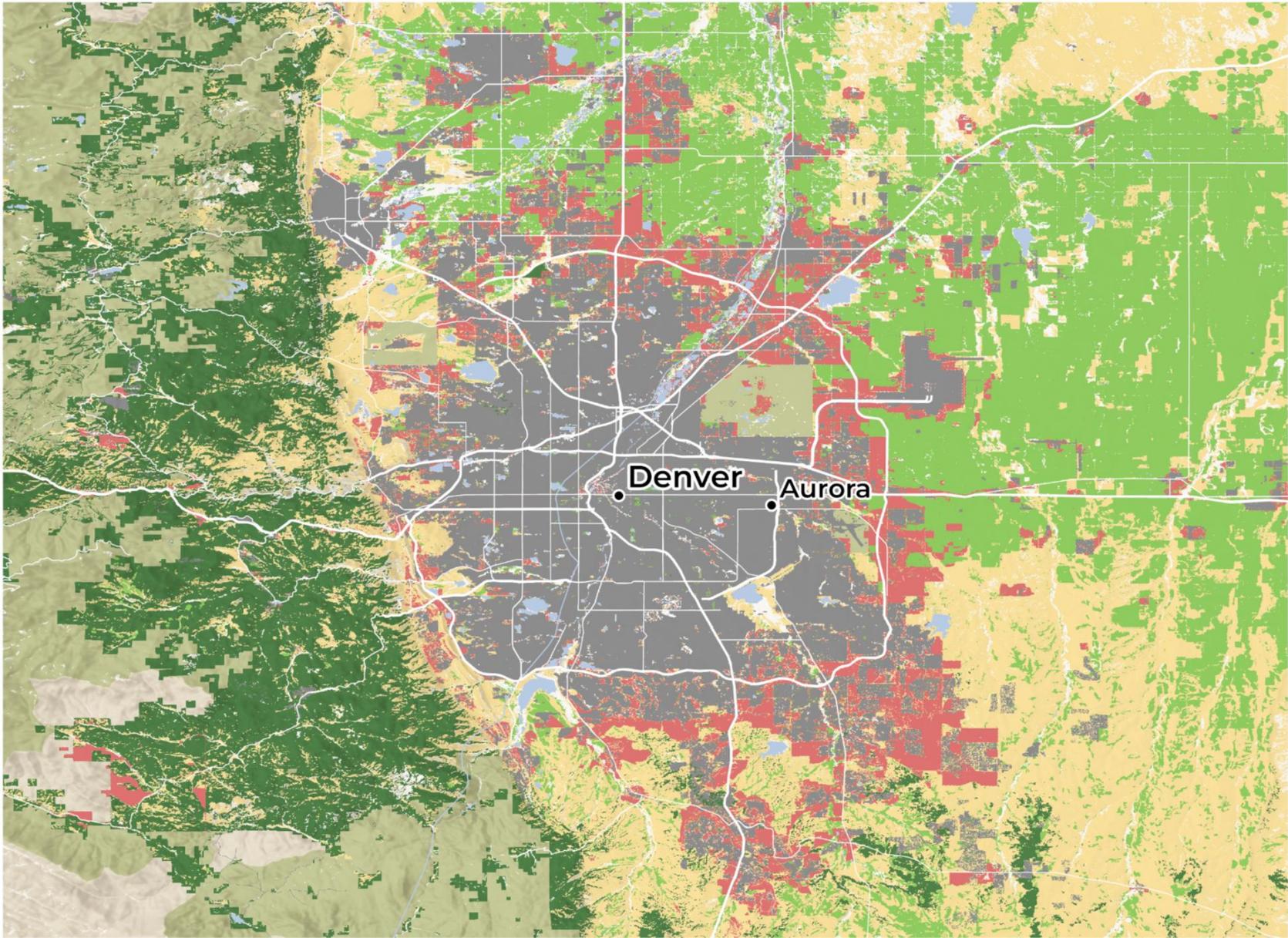


- Projected Conversion and Coastal Flooding (2040)**
- Urban and highly developed (UHD) and low-density residential (LDR)
  - Coastal flooding
- Land Cover (2016)**
- Farmland
  - Rangeland
  - Forestland
  - Urban areas
  - Federal (no grazing)
  - Federal (grazing)
  - Other lands
  - Water

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# America's farmland is under threat of conversion.



## Projected Conversion (2040)

Urban and highly developed (UHD) and low-density residential (LDR)

## Enlarged Area



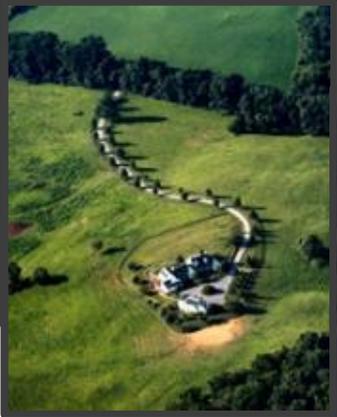
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- Farmland
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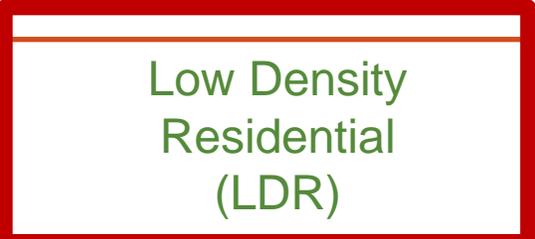
0 10 Miles



# Land development is largely a one-way path.



Rural ag  
+ forestry



Low Density  
Residential  
(LDR)



Urban and Highly Developed (UHD)

**Not all LDR is the same.**



**No Farms  
No Food**

**LDR – Homes Only**



Not all LDR is the same.



LDR – Crops

No Farms  
No Food



Not all LDR is the same.



No Farms  
No Food

LDR – Livestock



Not all LDR is the same.



No Farms  
No Food

LDR – Horse Farm



Not all LDR is the same.



No Farms  
No Food

LDR – Homes/Horse Farm



**LDR attracts  
urban intensification.**



**No Farms  
No Food**

**Aiken County, SC 2024**

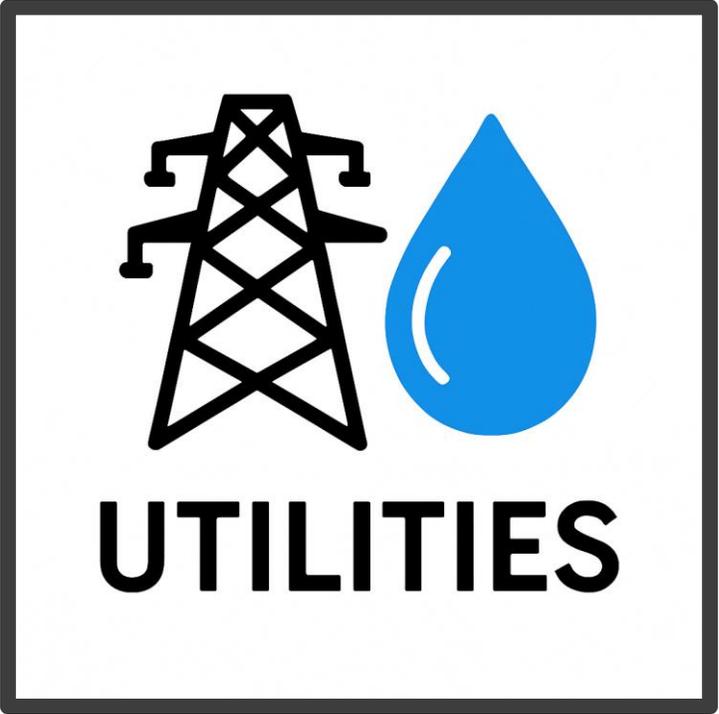
LDR attracts  
urban intensification.



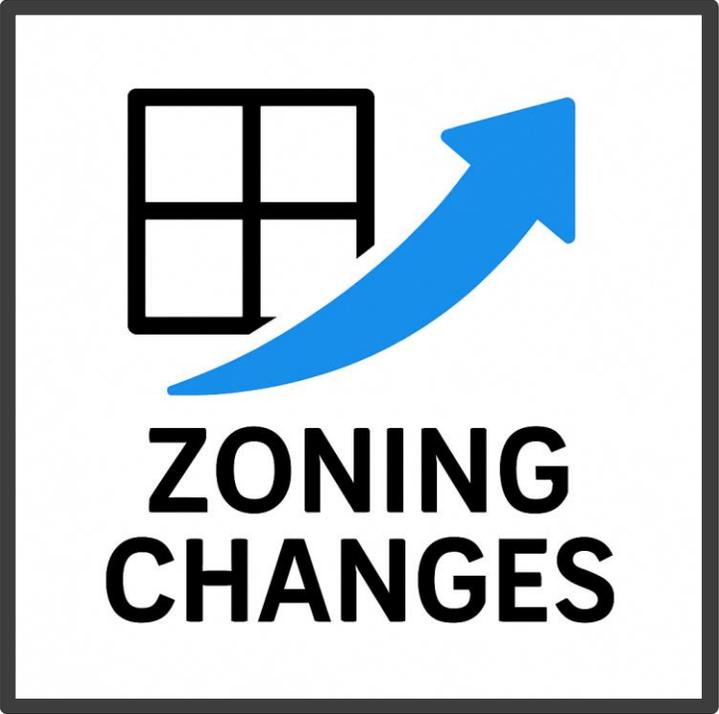
Aiken County, SC 2024

No Farms  
No Food

# Why does LDR attract urban intensification?

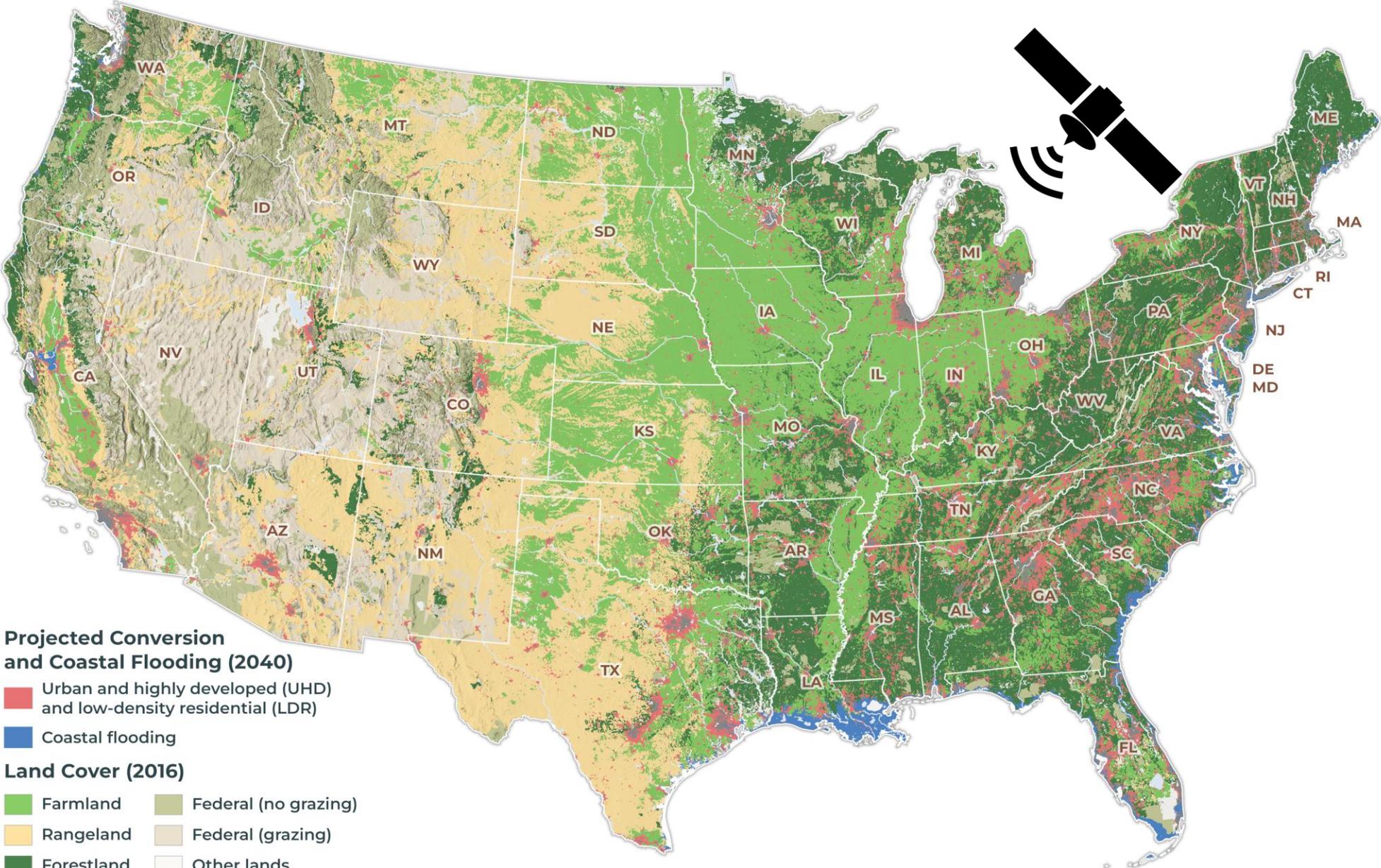


Makes land more accessible



Makes land easier to change

# Nationally, LDR is a big deal. But locally, land development is complex.



No Farms  
No Food



**Farmland loss due to warehouse development**



**Lehigh Valley, PA 2005**

**Farmland loss due to warehouse development**



# Farmland loss due to warehouse development

## Amazon considers \$15 billion warehouse expansion plan, Bloomberg News reports

By Reuters

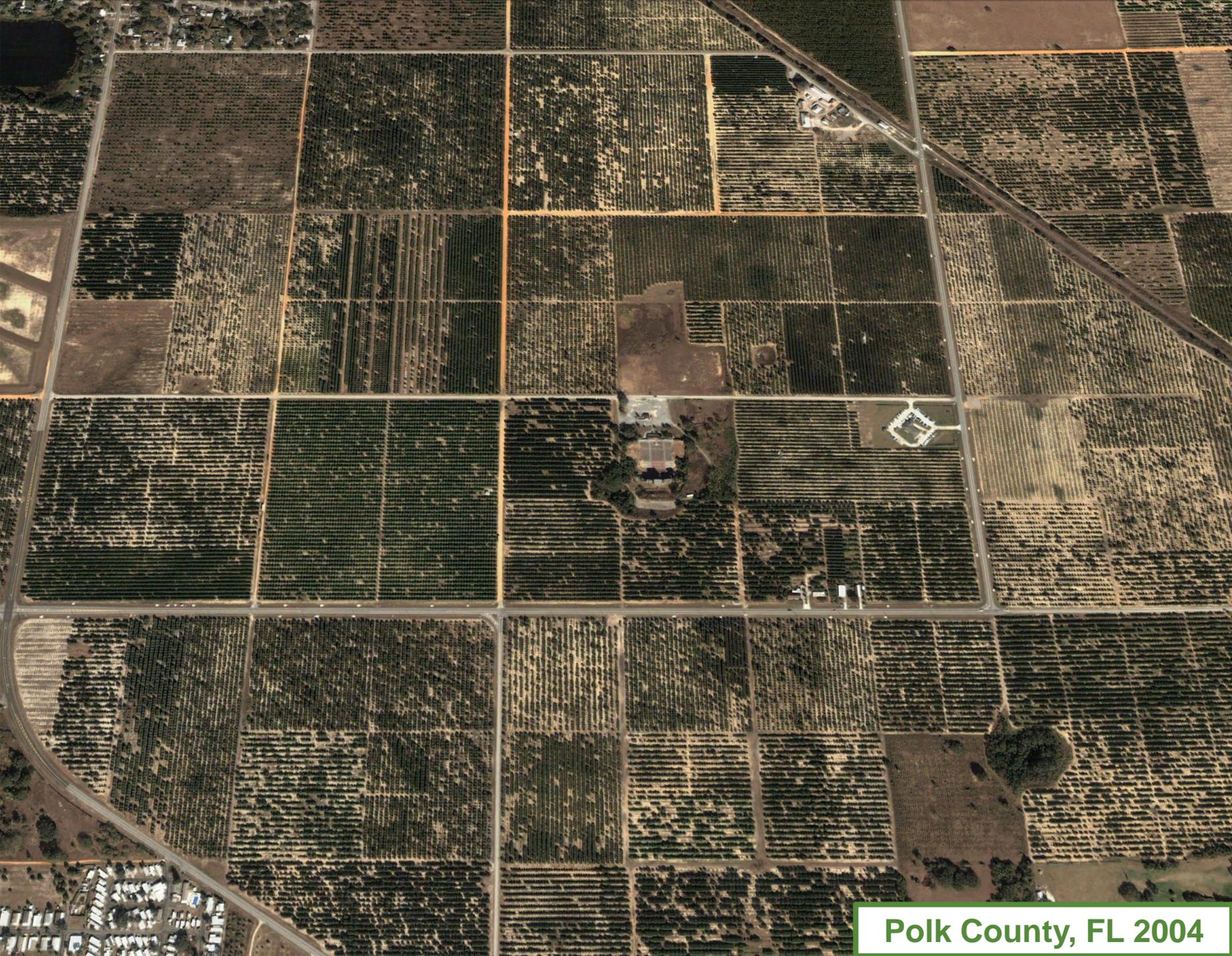
April 9, 2025 12:58 PM EDT · Updated 8 days ago

Bookmark icon | Aa font size icon | Share icon



The logo of U.S. online retailer Amazon is displayed at a logistics centre in Trapagaran, northern Spain, November 22, 2023. REUTERS/Vincent West/File Photo [Purchase Licensing Rights](#)

**Farmland loss due to environmental stress.**



**Polk County, FL 2004**

**Farmland loss due to environmental stress.**



Farmland loss due to environmental stress.



AP

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U.S. NEWS

# Hit by storms and disease, Florida's citrus growers try to survive until bug-free trees arrive



PV MIKE SCHNEIDER

Updated 12:43 PM EDT, March 14, 2025

Share

**Farmland loss due to solar development.**



**Rosanky, TX 2022**

**Farmland loss due to solar development.**



**Rosanky, TX 2025**

**Farmland does not always have to be lost to development.**

## **AFT Smart Solar**

**Prioritize solar siting on buildings and land not well suited for farming**

**Safeguard the ability for land to be used for agriculture**

**Grow both agricultural production and solar energy**



Photo Credit: RWE



# Agrivoltaics looks to revolutionize global food production

The widespread use of agricultural land for solar farms has sparked fears of shrinking crop yields and harm to biodiversity.



JOSHUA SHAVIT

Published

Apr 14, 2025 3:07 PM PDT



## THE SPOKESMAN-REVIEW

Spokane, Washington Est. May 19, 1883

Nation World

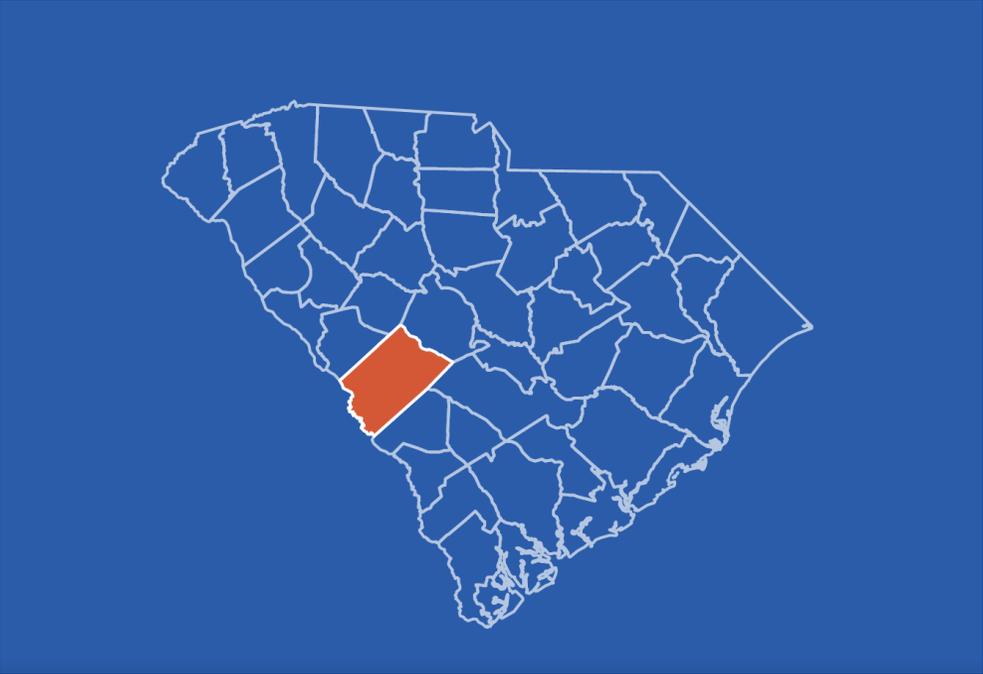
NEWS > NATION/WORLD

### Under a Texas sun, agrivoltaics offer farmers a new way to make money

Sept. 24, 2024 | Updated Tuesday, Sept. 24, 2024 at 6:24 p.m.



# How can we advance local planning for agriculture?



## Aiken 2040 Visioning Session FINAL REPORT

JANUARY 2025

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**No Farms  
No Food**



# Aiken County, SC 2040

## % Change (2016-2040)

Total farmland	-9%
Total LDR	39%
Total UHD	16%



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No Food**

# Aiken County, South Carolina: Projected Conversion of Agricultural Land

## Projected Conversion (2040)

- Urban and Highly Developed
- Low Density Residential

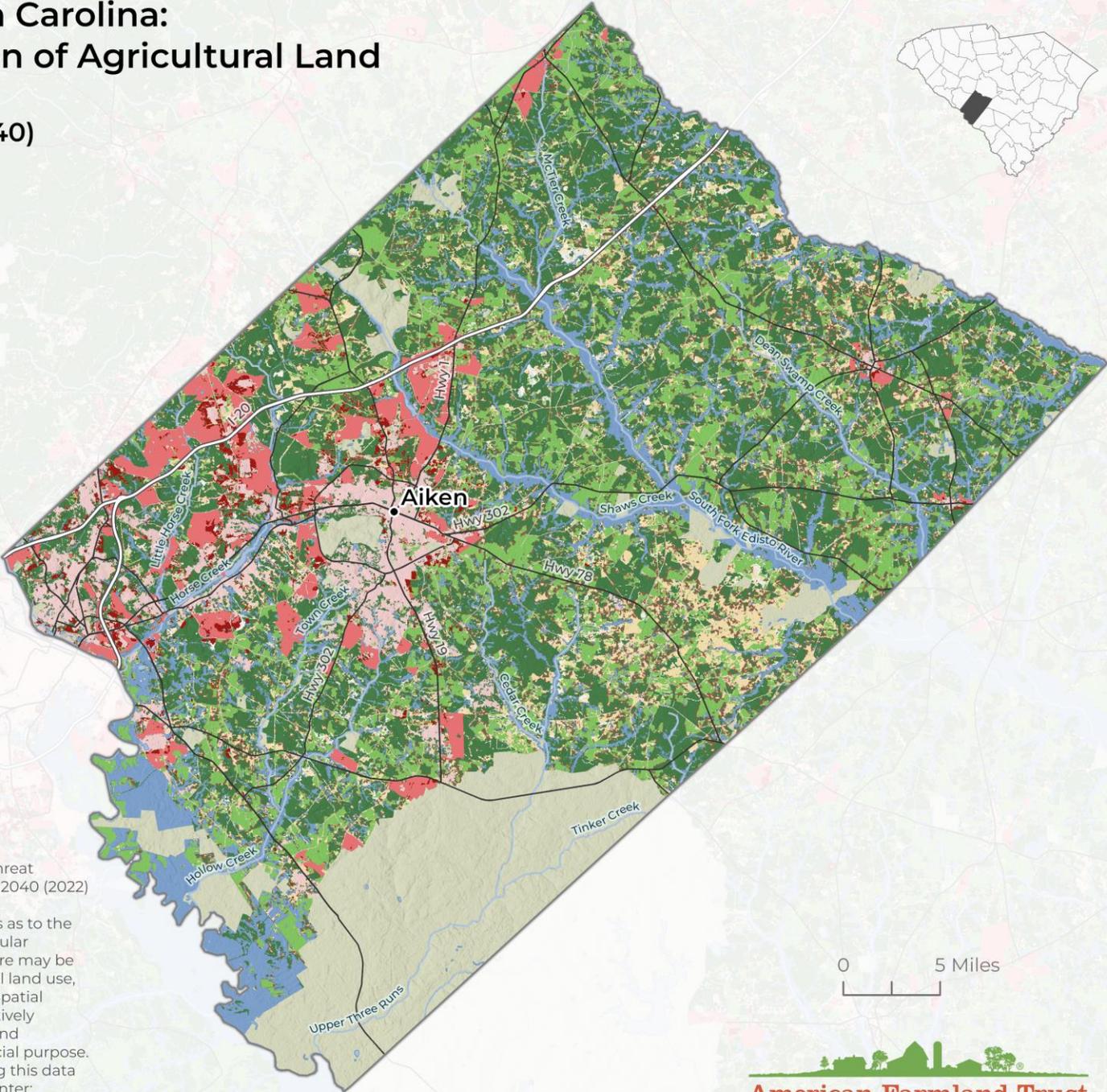
## Farmland

- Cropland
- Pasture
- Woodland

## Other Land Cover

- Urban and Highly Developed
- Water
- Protected Lands
- Wetlands
- Forest
- Other
- Primary Roads
- Secondary Roads

**Sources**  
 U.S Census (2020), ESRI, USGS, Farms Under Threat  
 State of the States (2020), Farms Under Threat 2040 (2022)  
**Disclaimer**  
 American Farmland Trust makes no warranties as to the suitability of the data found here for any particular purpose or user. The spatial data presented here may be used as an informative inventory of agricultural land use, land quality, and specific types of conversion. Spatial patterns may be exaggerated in order to effectively display data at the required map scale. Data and information may not be used for any commercial purpose. For more information or suggestions regarding this data please contact AFT's Farmland Information Center: [www.farmlandinfo.org](http://www.farmlandinfo.org) or (800) 370-4879.

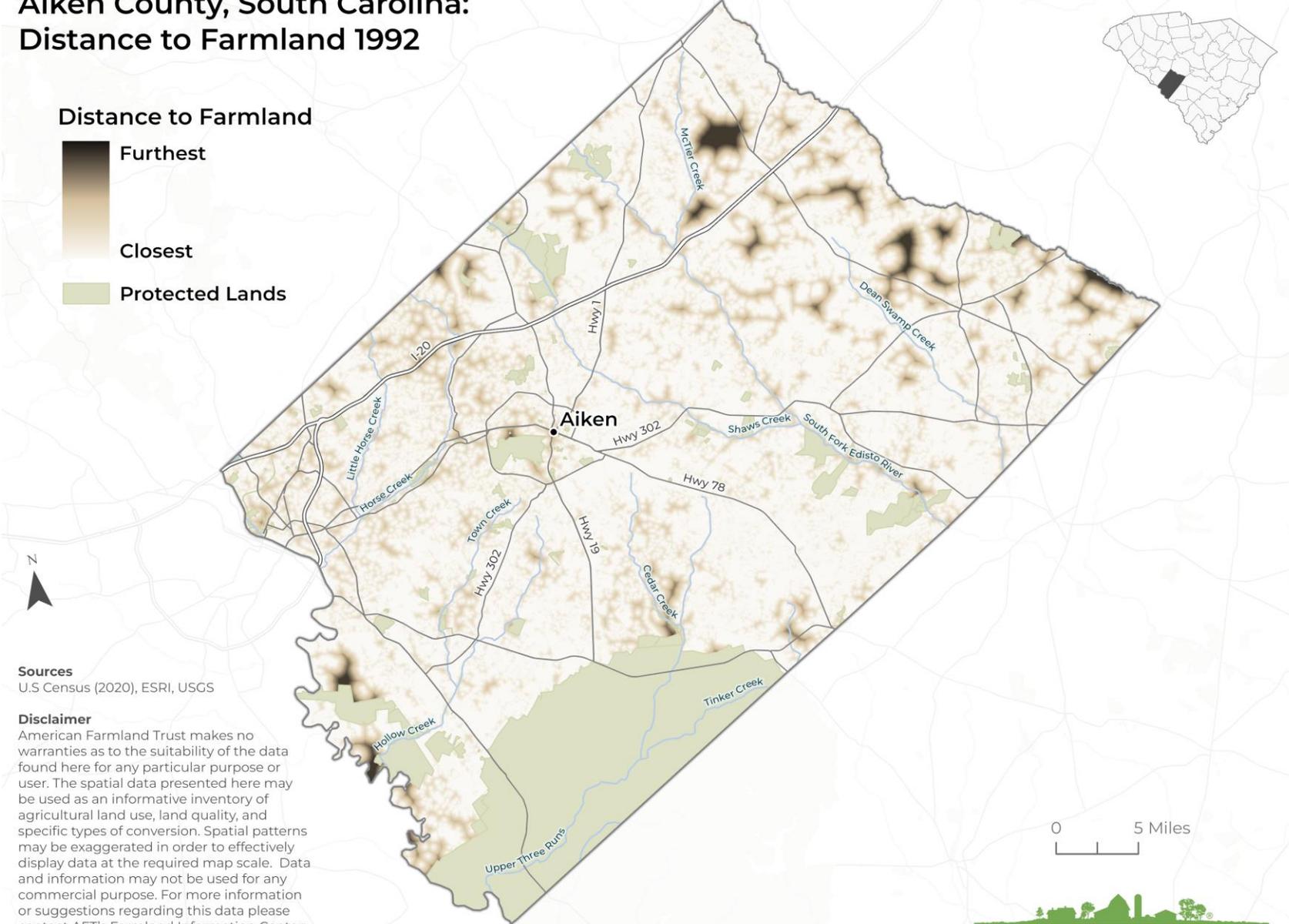


**American Farmland Trust**

# LDR, among other factors, is fragmenting Aiken's agricultural landscape.

## Aiken County, South Carolina: Distance to Farmland 1992

### Distance to Farmland



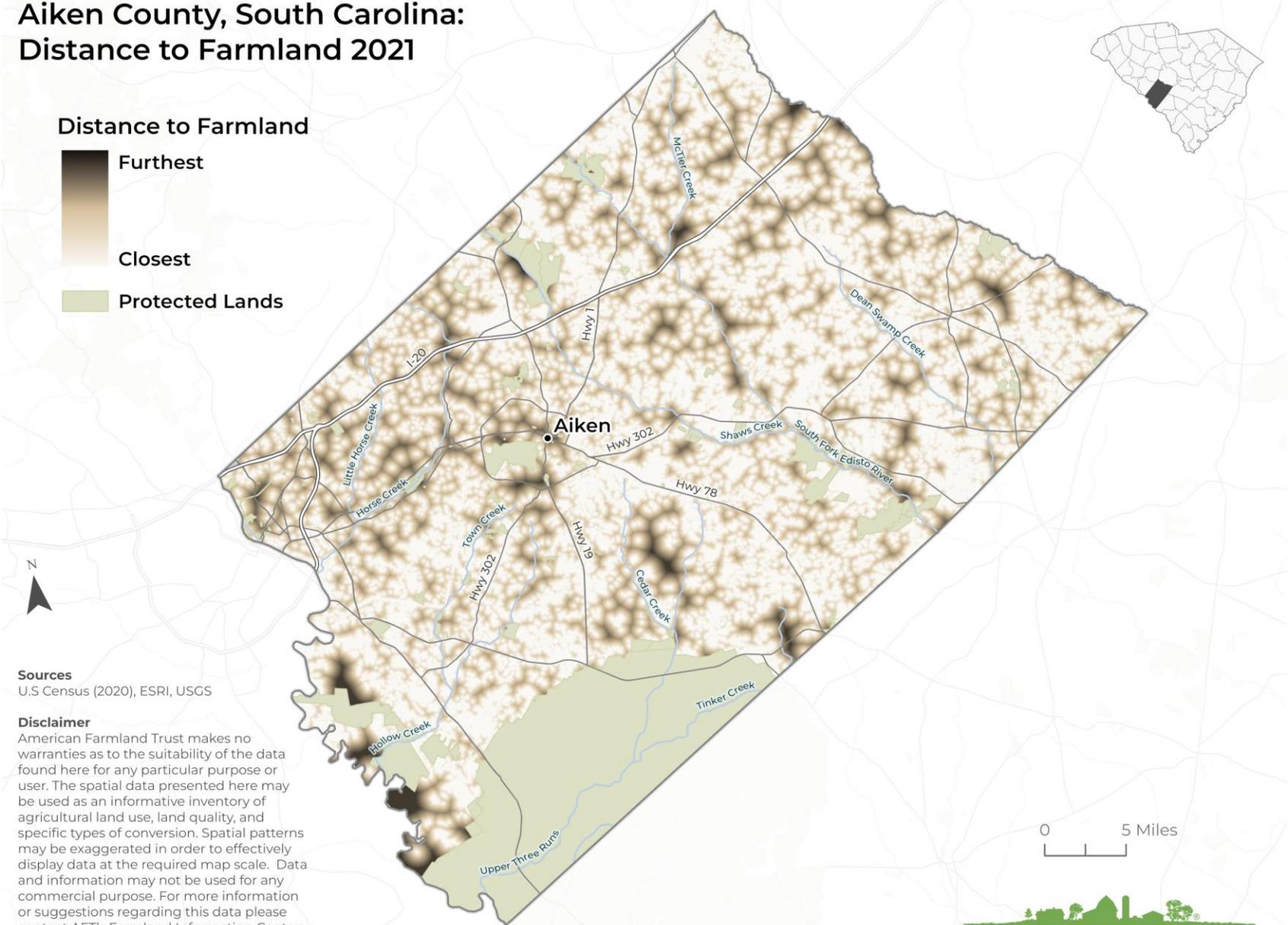
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# LDR, among other factors, is fragmenting Aiken's agricultural landscape.

## Aiken County, South Carolina: Distance to Farmland 2021

### Distance to Farmland



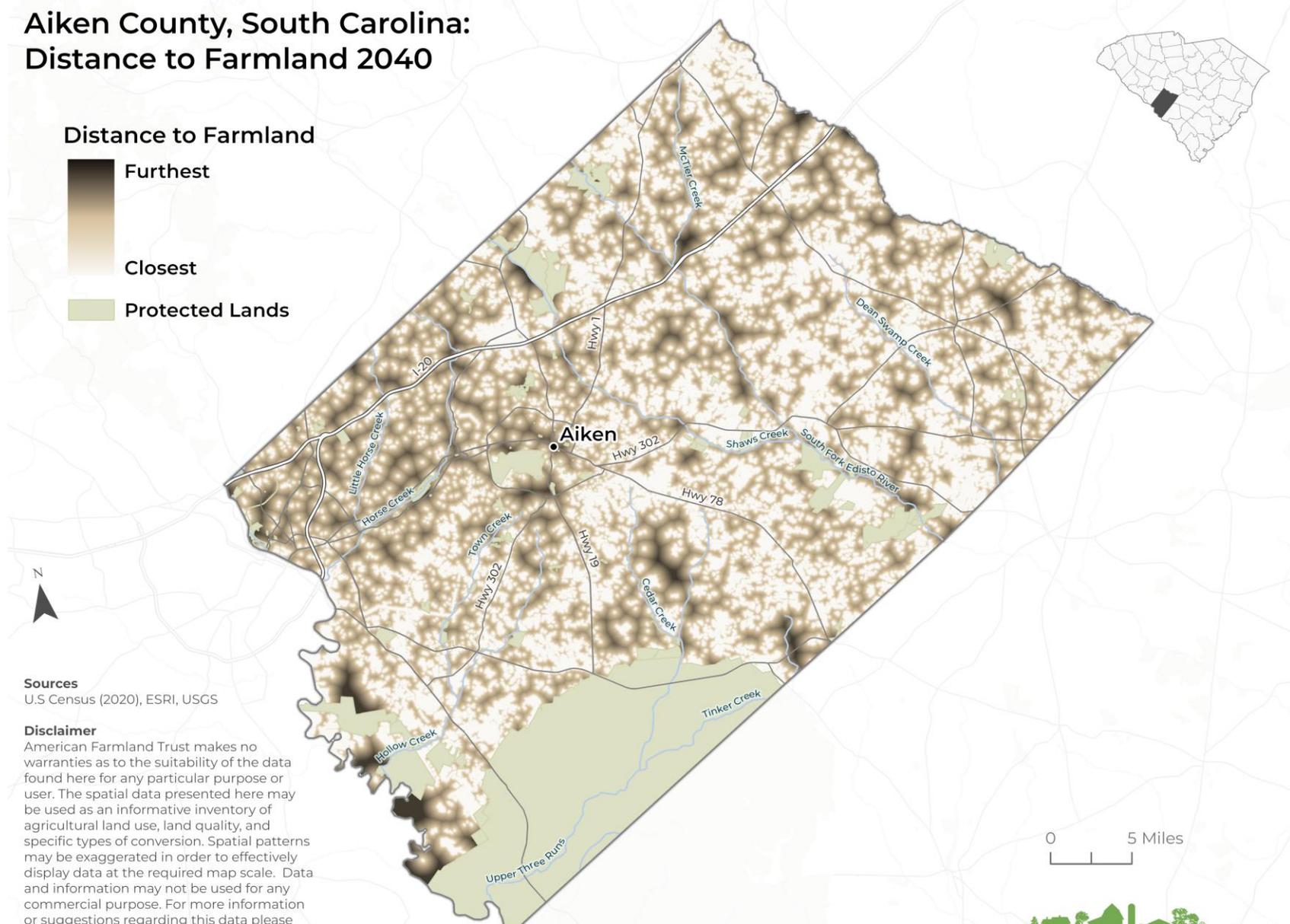
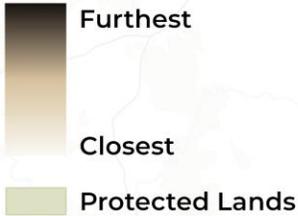
**Sources**  
U.S Census (2020), ESRI, USGS

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# LDR, among other factors, is fragmenting Aiken's agricultural landscape.

## Aiken County, South Carolina: Distance to Farmland 2040

### Distance to Farmland



**Sources**  
U.S Census (2020), ESRI, USGS

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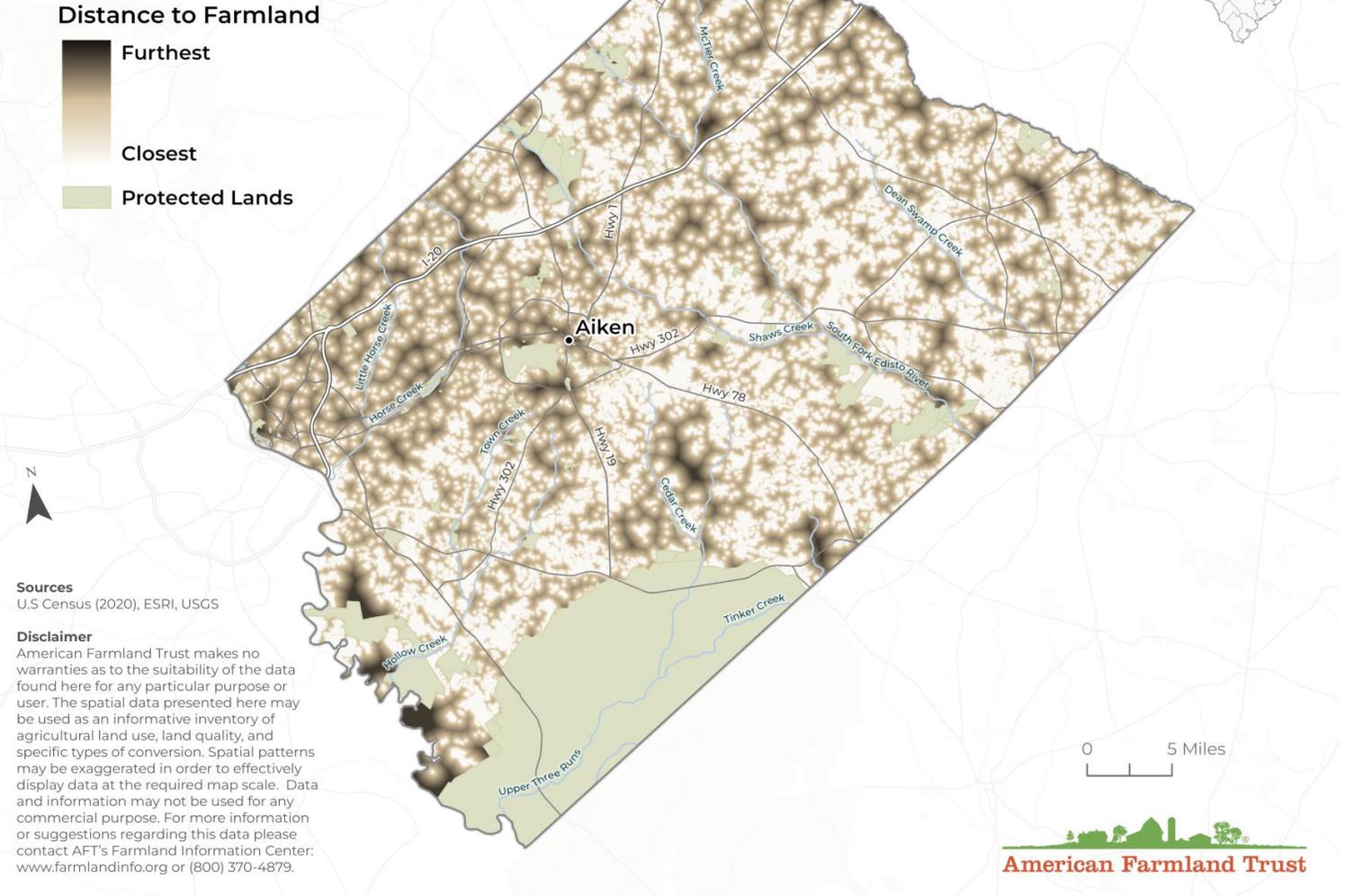
**No Farms  
No Food**



# The Aiken County Challenge:

How can Aiken County promote its agriculture – including equestrian – without having runaway intensification and fragmentation?

### Aiken County, South Carolina: Distance to Farmland 2040



No Farms  
No Food

How can we better plan for agriculture in our local settings?



# Protection Priority Survey



Place A-H on the scale below based on your preference for protection.

**No Policy Priority**

**Extreme Policy Priority**



**My Least Preferred**

**My Most Preferred**

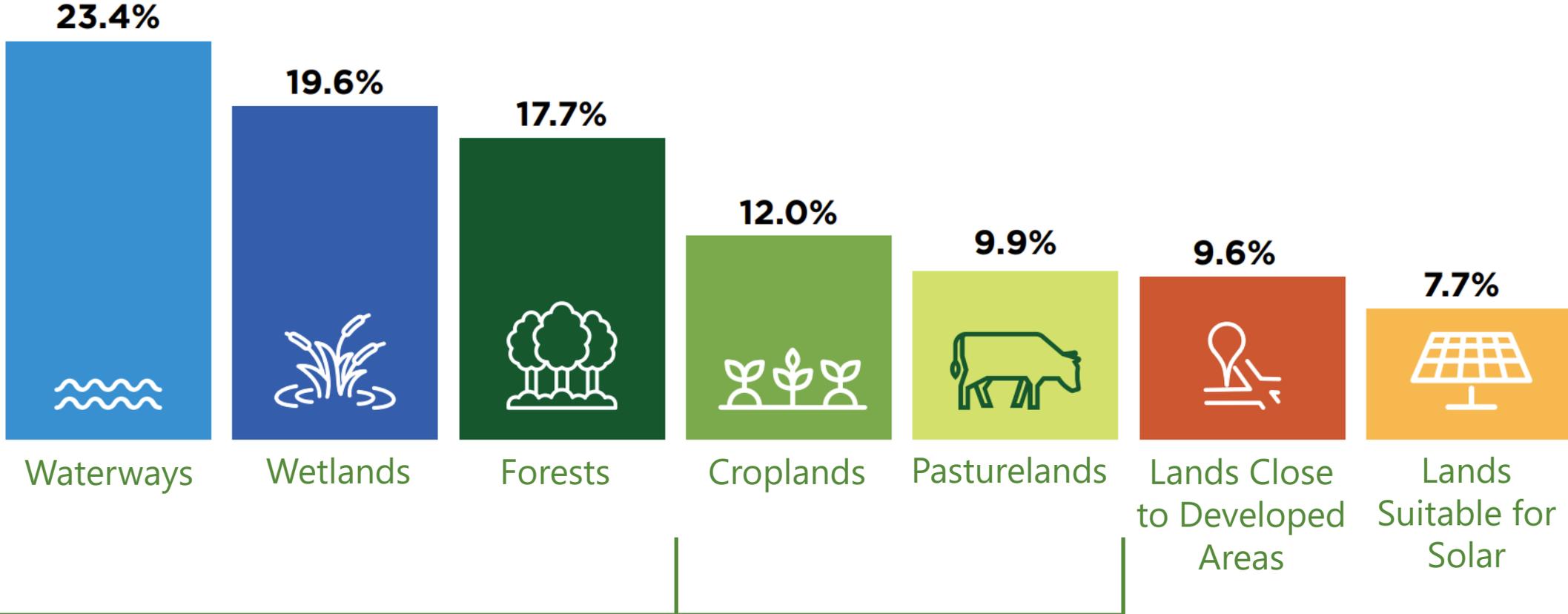
- A. Crops
- B. Forests
- C. Wetlands
- D. Pastures
- E. Lands Suitable for Solar
- F. Waterways
- G. Lands Close to Developed Areas
- H. Other: Highly Suitable Soils

**How can we better understand tradeoffs  
when planning for agriculture?**

**Analytic Hierarchy Process (AHP)**

Helping to make decisions when tradeoffs have to be made

# Protection Priority Survey



**ECO-**  
**60.7%**

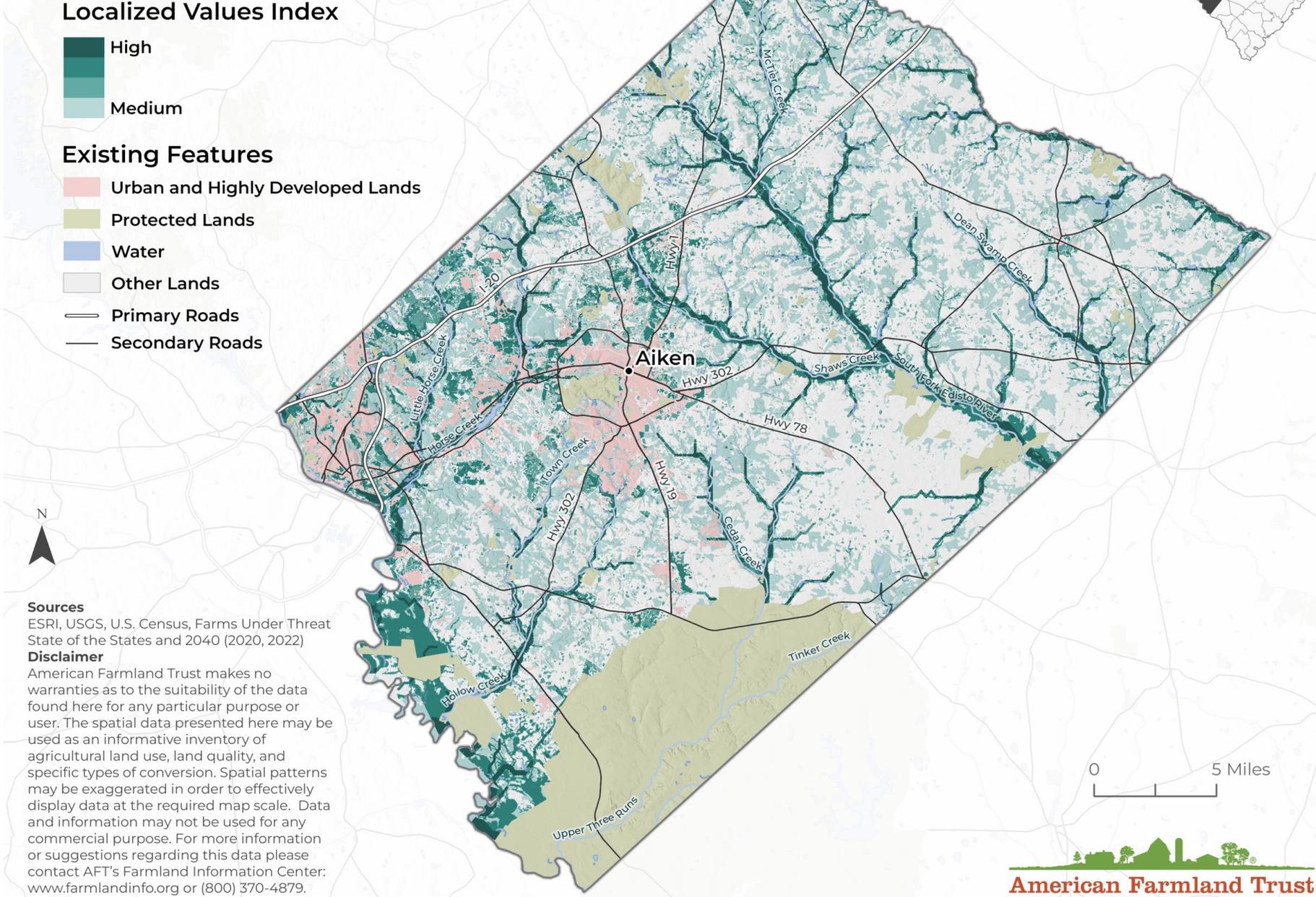
**AGRO-**  
**21.9%**

**No Farms  
No Food**



Localized values must be captured in decision-making

# Aiken County, South Carolina: Localized Values Index



No Farms  
No Food

We can also integrate more specialized data

# Aiken County, South Carolina: Productivity, Versatility, and Resilience

## Projected Conversion (2040)

- Urban and Highly Developed
- Low Density Residential

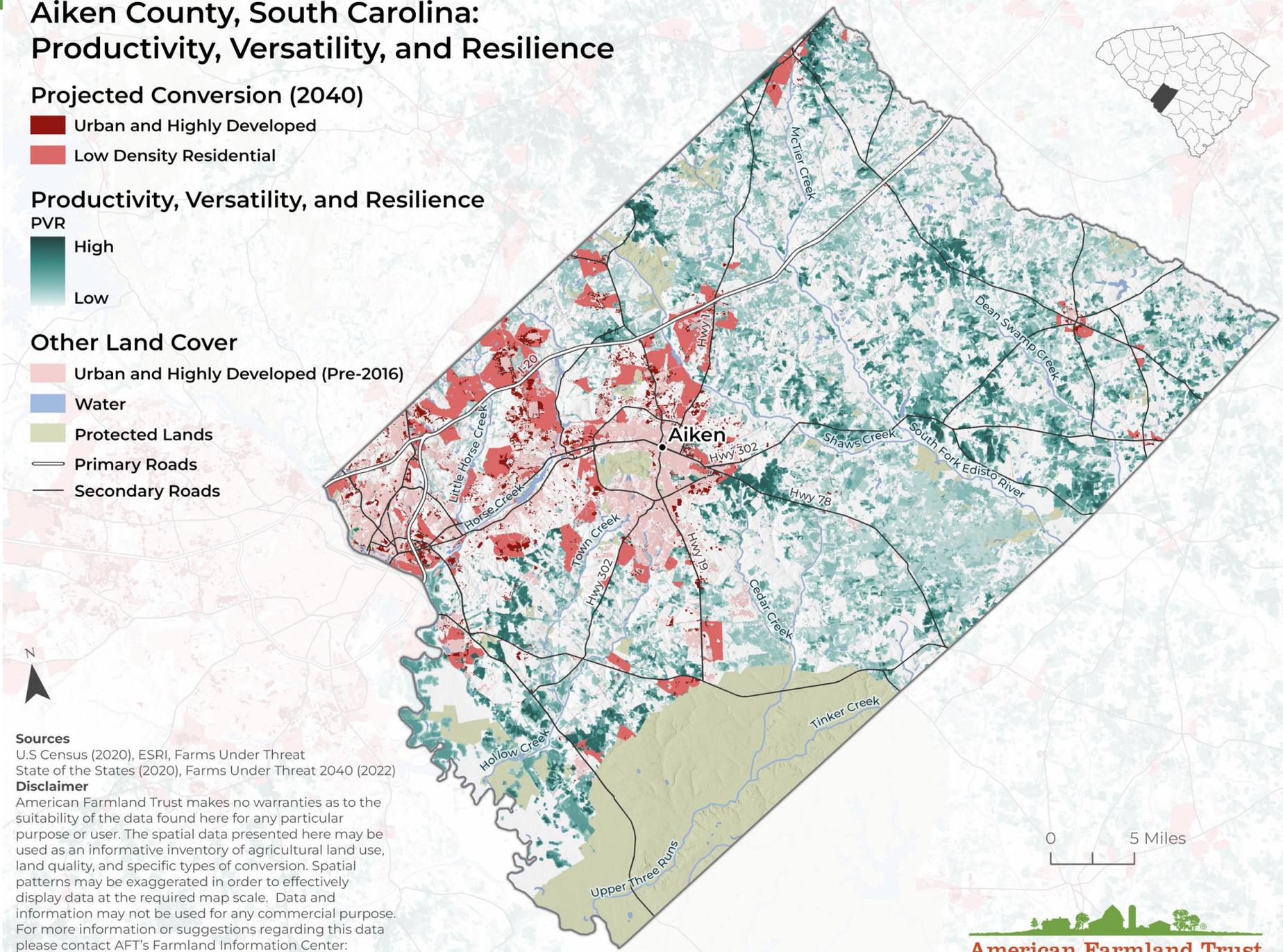
## Productivity, Versatility, and Resilience

PVR

- High
- Low

## Other Land Cover

- Urban and Highly Developed (Pre-2016)
- Water
- Protected Lands
- Primary Roads
- Secondary Roads



### Sources

U.S. Census (2020), ESRI, Farms Under Threat State of the States (2020), Farms Under Threat 2040 (2022)

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No Farms No Food



# Aiken Opportunities

## Aiken County, South Carolina: Projected Conversion of Agricultural Land

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- Pasture
- Woodland

### Other Land Cover

- Urban and Highly Developed
- Water
- Protected
- Wetland
- Forest
- Other
- Primary
- Secondary

### Sources

U.S. Census (2000)  
State of the South  
**Disclaimer**

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suitability of  
purpose or use  
used as an in  
land quality,  
patterns may  
display data  
information

For more information or suggestions regarding this data  
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**Showcase Opportunity**

**Protection Opportunity**

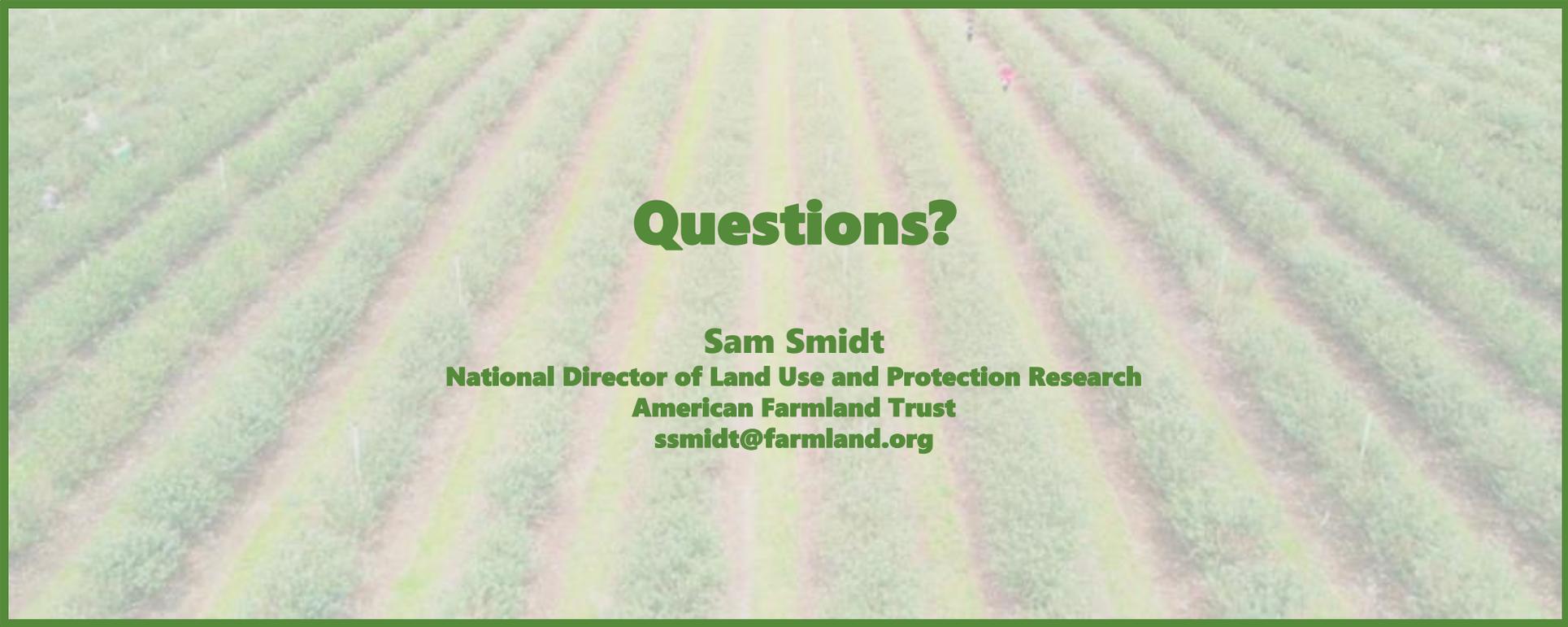


**No Farms  
No Food**

  
**American Farmland Trust**

## CONCLUSIONS:

- 1. Land cover data are ready to be utilized for agricultural planning.**
- 2. Farmland loss is complex – national vs. local trends may be different.**
- 3. Localized values can be integrated to avoid one-size-fits all solutions.**
- 4. Planning for agriculture requires holistic solutions.**



# Questions?

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