

Planning for Agriculture Through Land Cover Observations

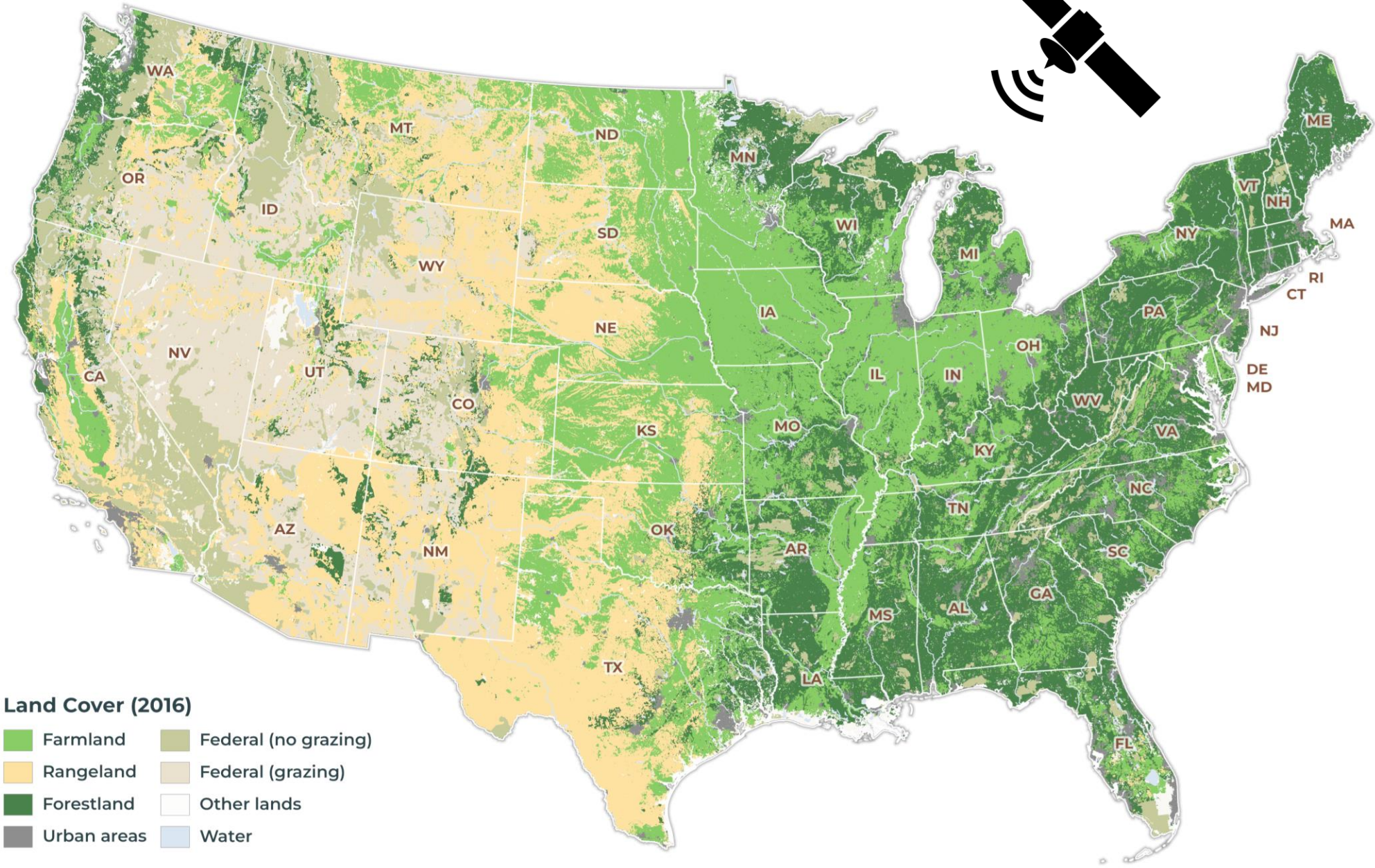
Sam Smidt

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ssmidt@farmland.org**



American Farmland Trust

America's farmland is under threat of conversion.



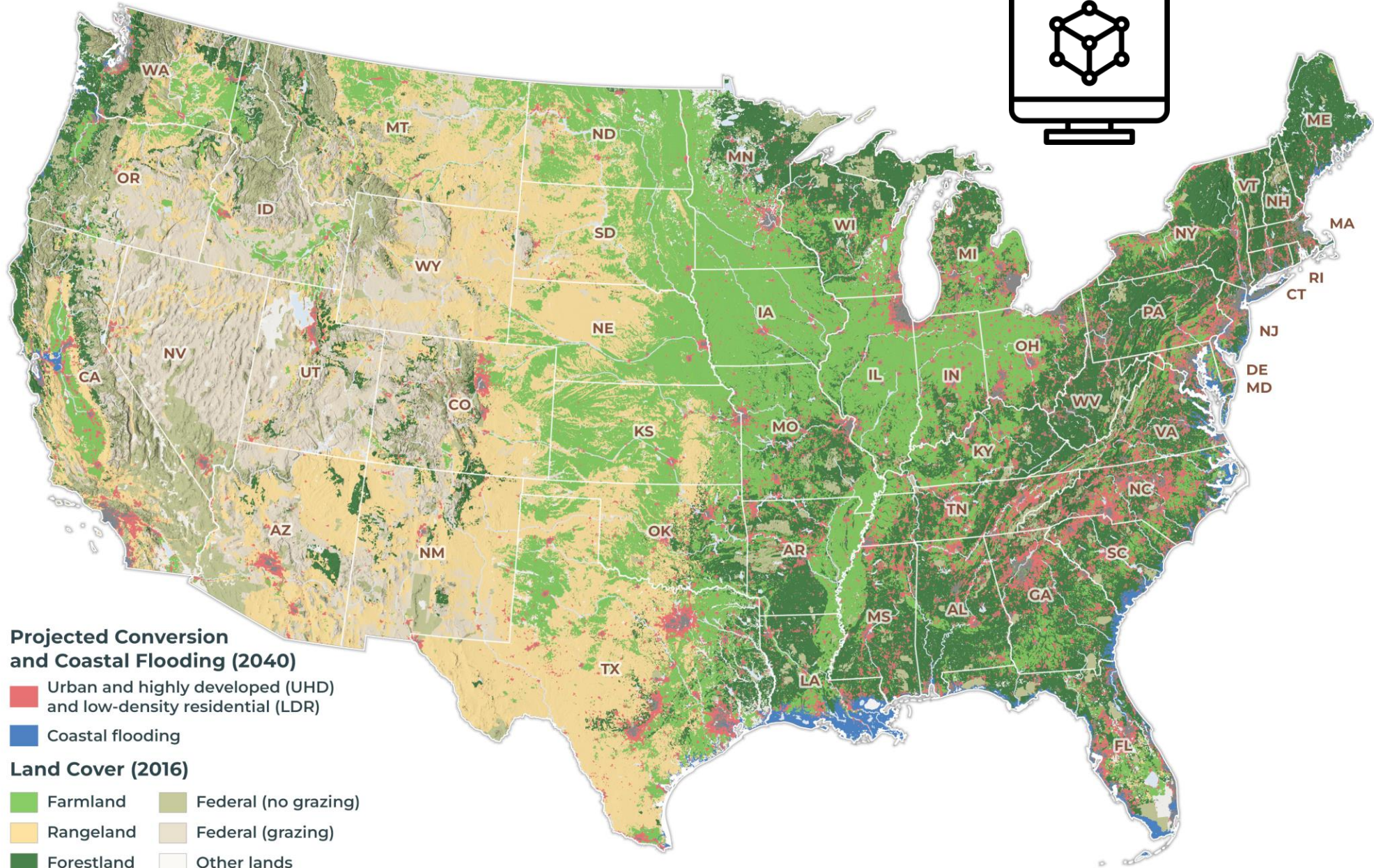
Land Cover (2016)

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

No Farms
No Food



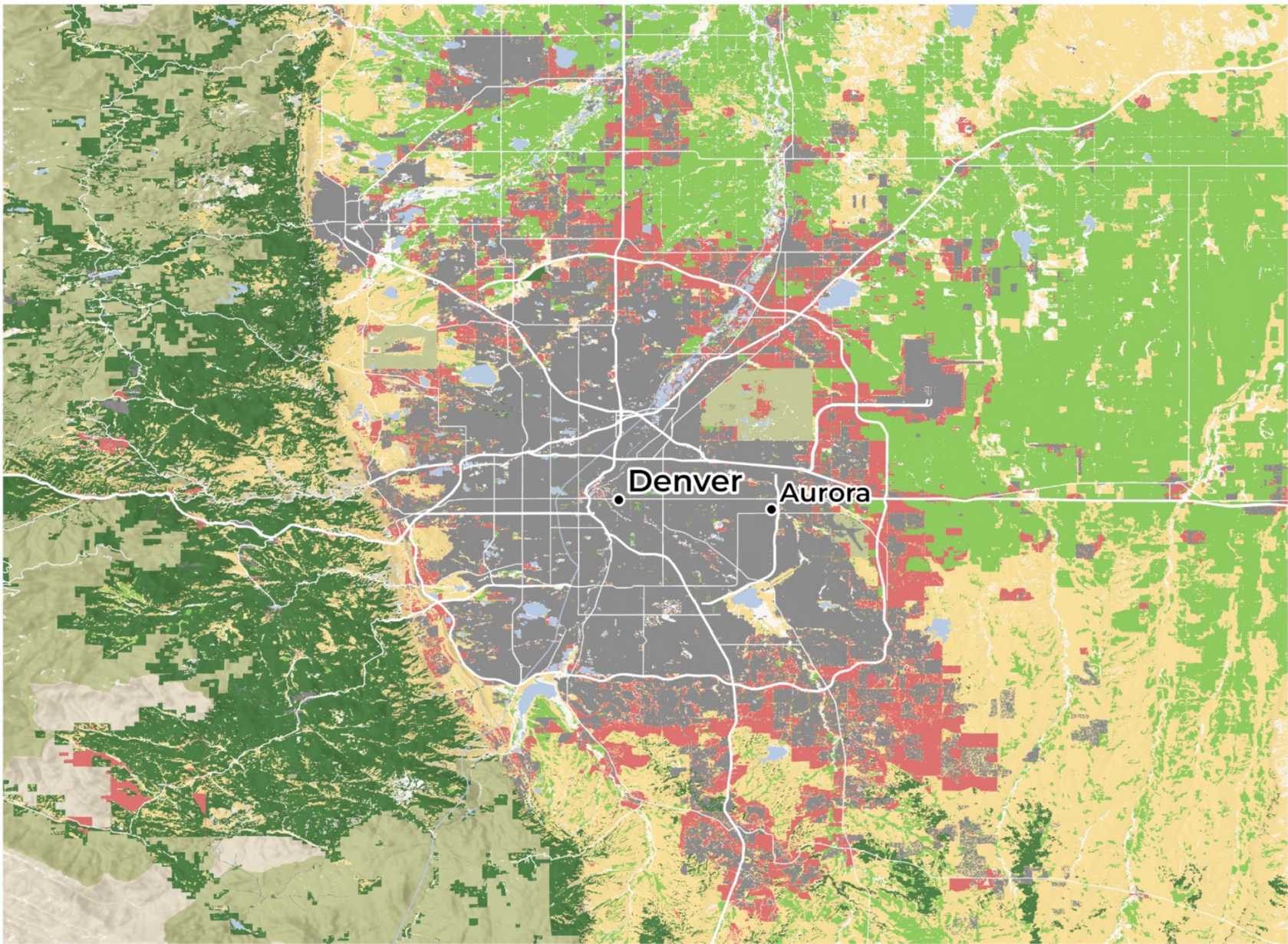
America's farmland is under threat of conversion.



No Farms
No Food



America's farmland is under threat of conversion.



Projected Conversion (2040)

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

Enlarged Area



Land Cover (2016)

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

0 10 Miles



Land development is largely a one-way path.



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.



LDR – Horse Farm

No Farms
No Food



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

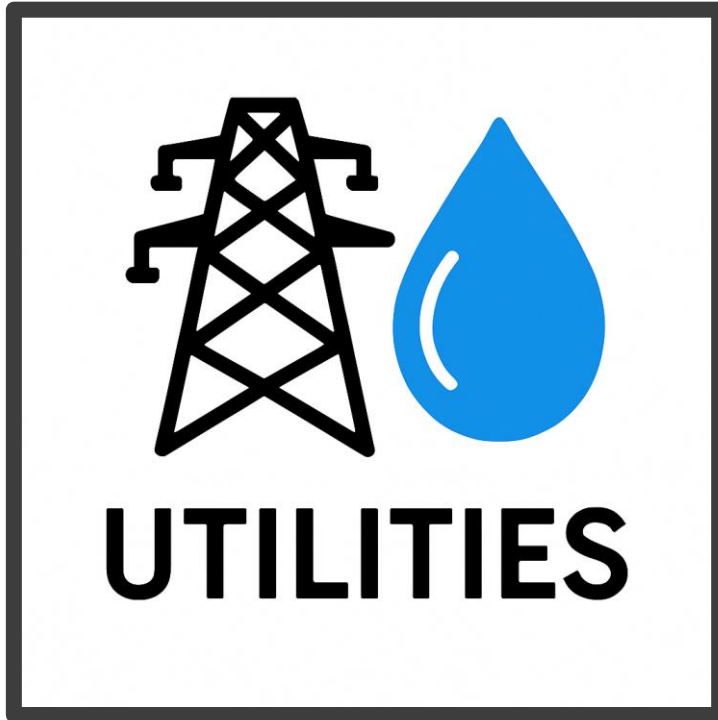
LDR attracts
urban intensification.



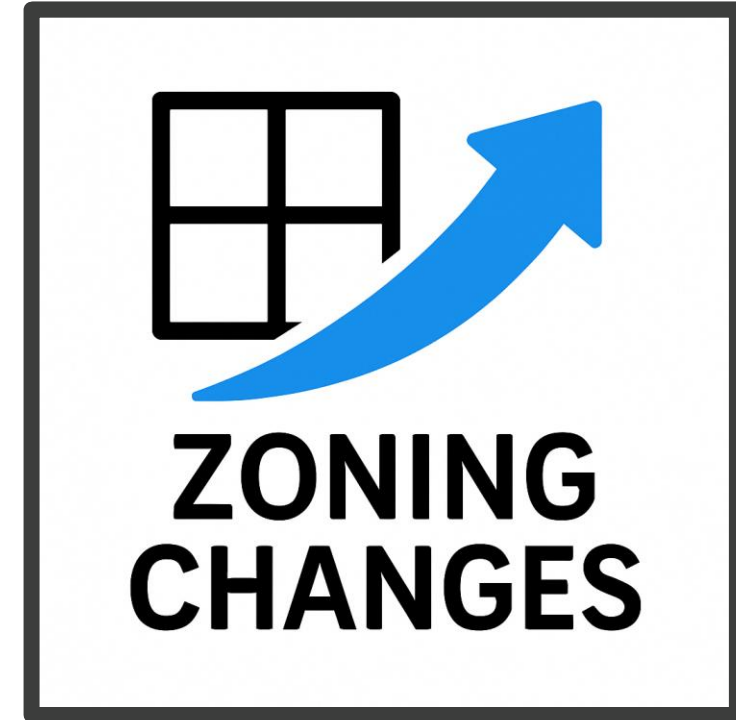
Aiken County, SC 2024

No Farms
No Food

Why does LDR attract urban intensification?

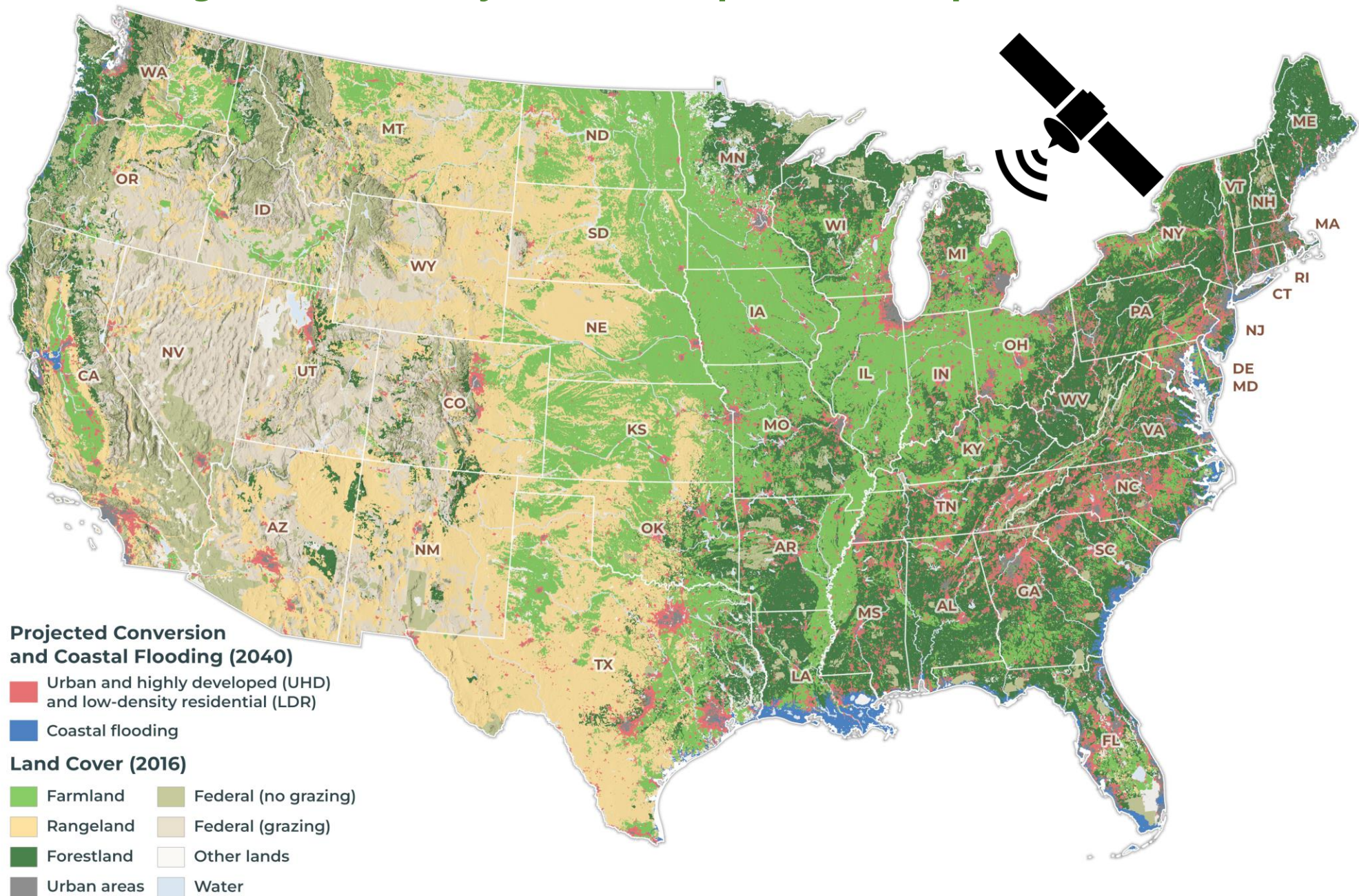


Makes land more accessible



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**



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

By Reuters

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

Aa



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.



Polk County, FL 2025

Farmland loss due to environmental stress.



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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 SHAVITPublished Apr 14, 2025 3:07 PM PDT



THE SPOKESMAN-REVIEW

Spokane, Washington Est. May 19, 1883

Nation World

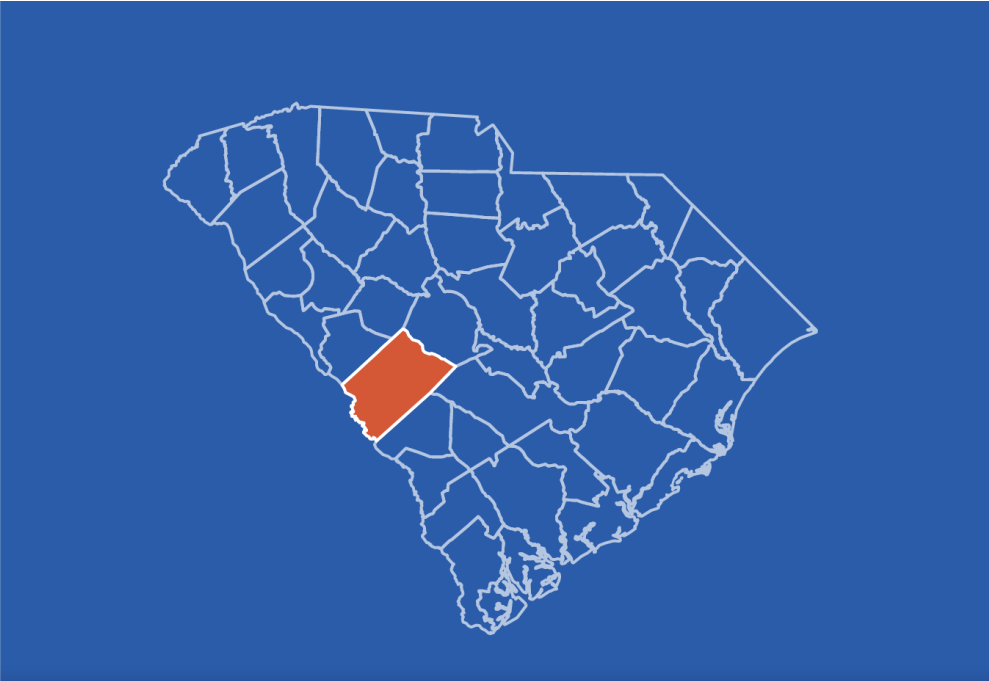
NEWS > NATION/WORLD

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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Aiken County, SC 2040

% Change (2016-2040)	
Total farmland	-9%
Total LDR	39%
Total UHD	16%



No Farms
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

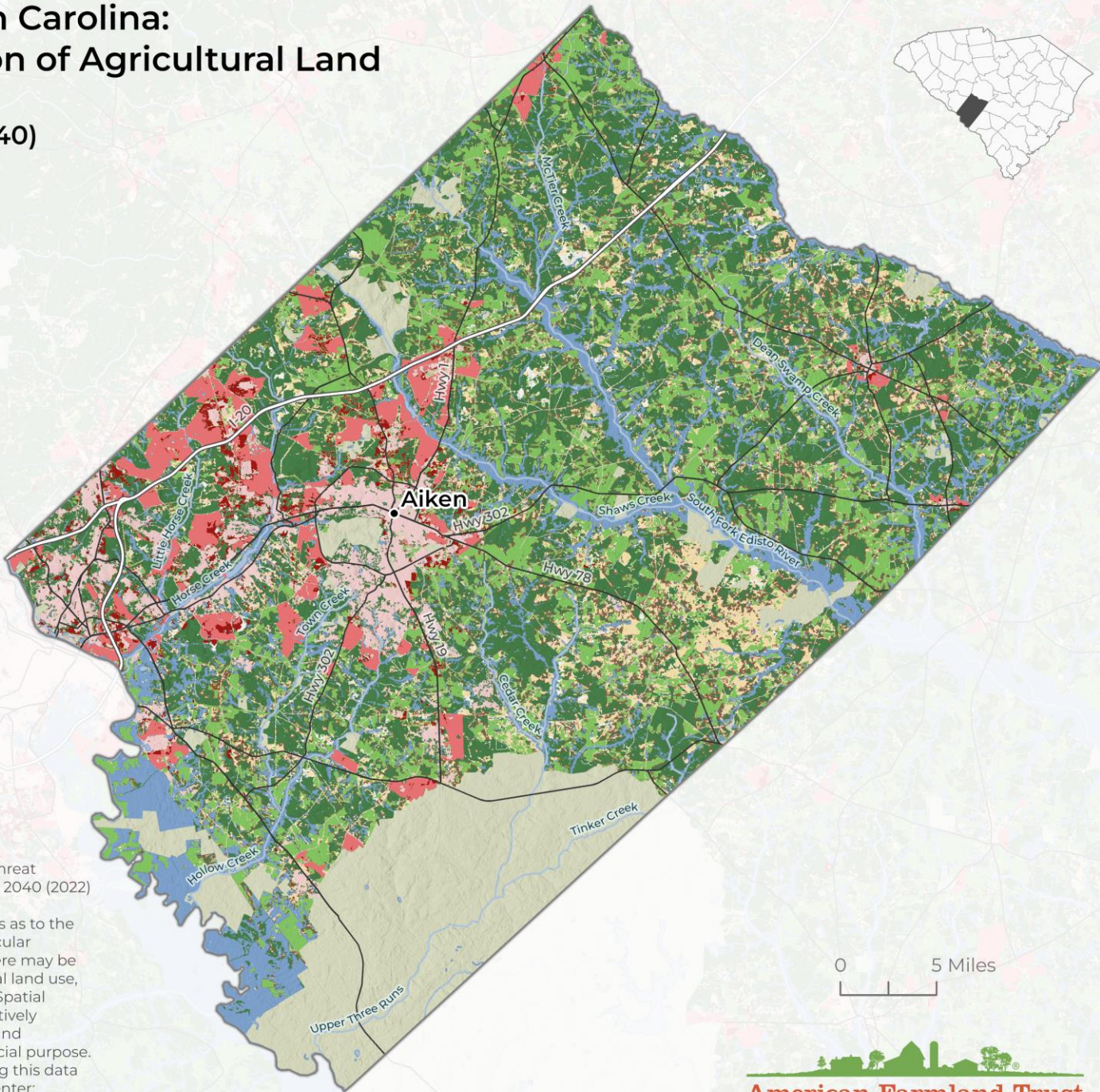
- Urban and Highly Developed
- Water
- Protected Lands
- Wetlands
- Forest
- Other
- Primary Roads
- Secondary Roads

Sources

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

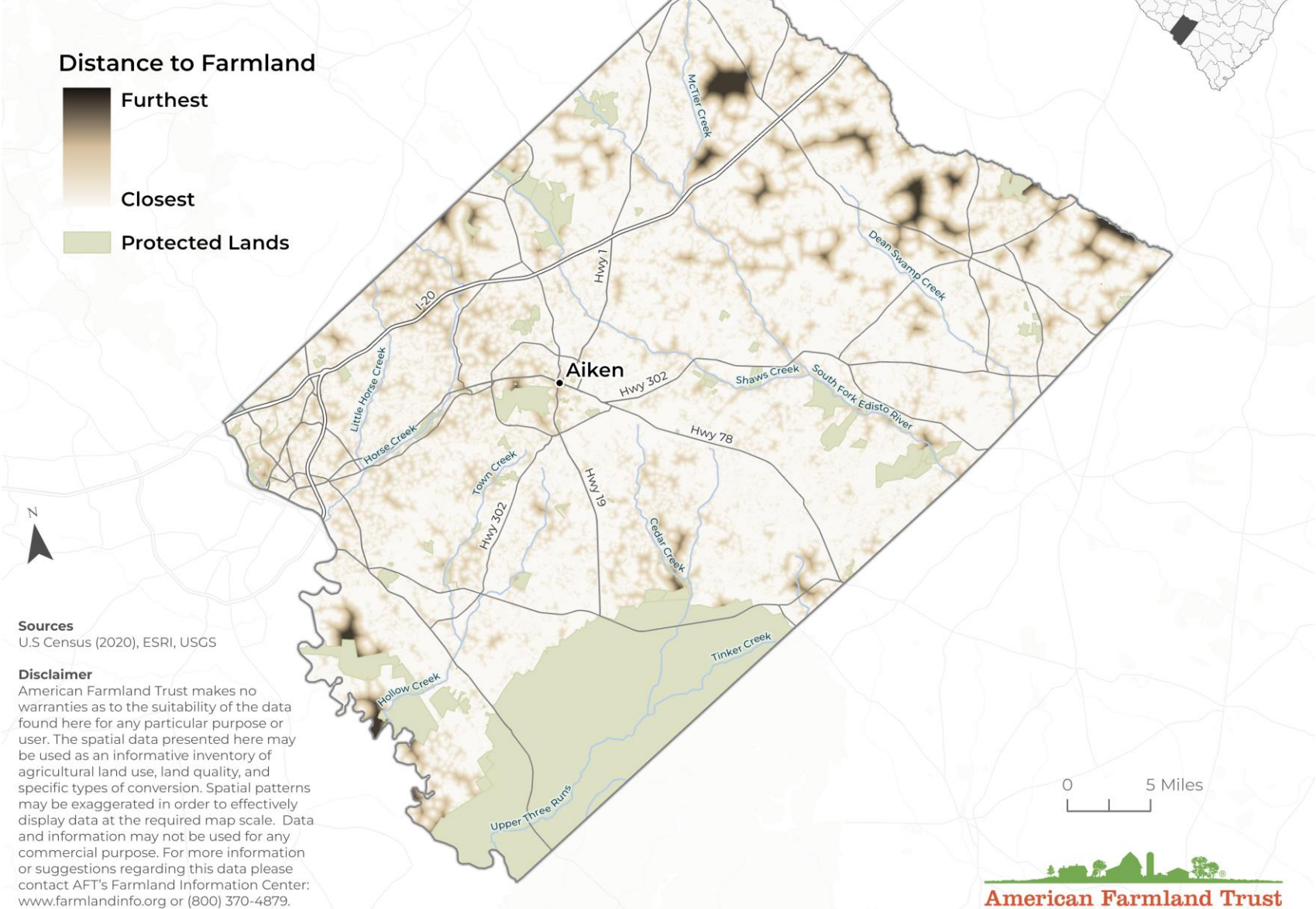
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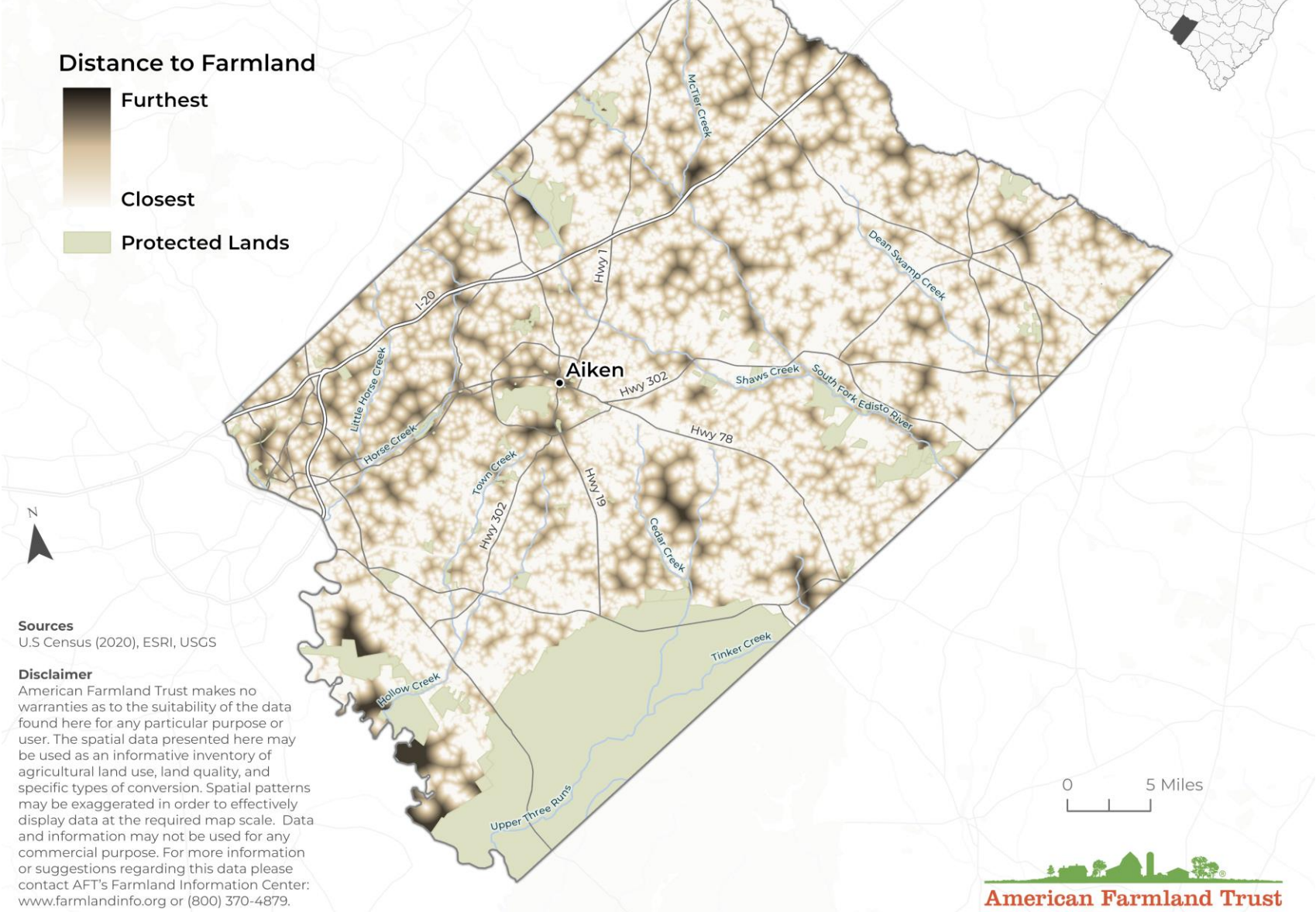
LDR, among other factors, is fragmenting Aiken's agricultural landscape.

Aiken County, South Carolina: Distance to Farmland 1992



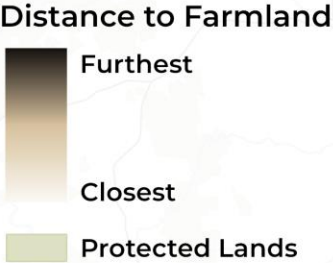
LDR, among other factors, is fragmenting Aiken's agricultural landscape.

Aiken County, South Carolina:
Distance to Farmland 2021



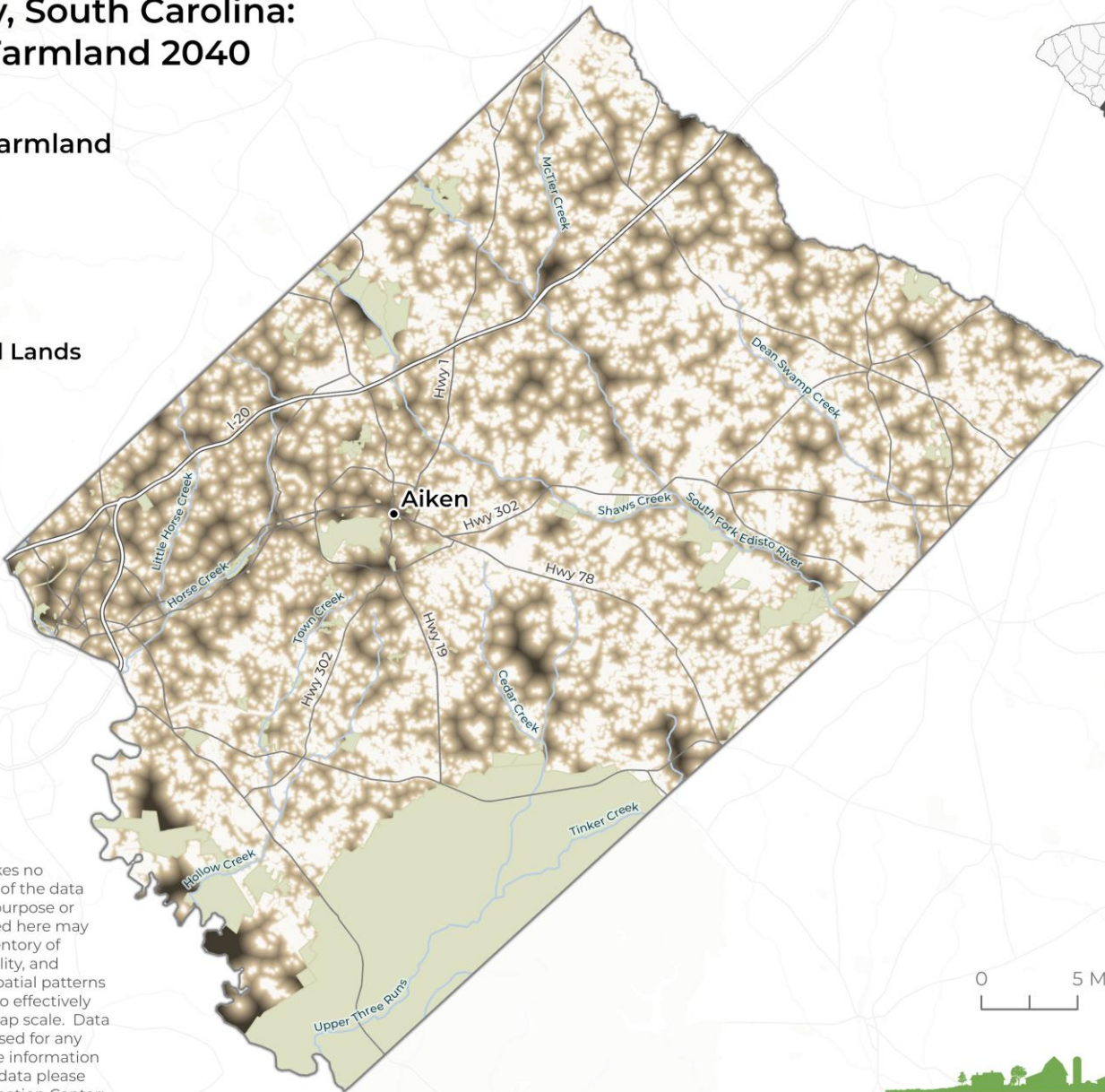
LDR, among other factors, is fragmenting Aiken's agricultural landscape.

Aiken County, South Carolina: Distance to Farmland 2040



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

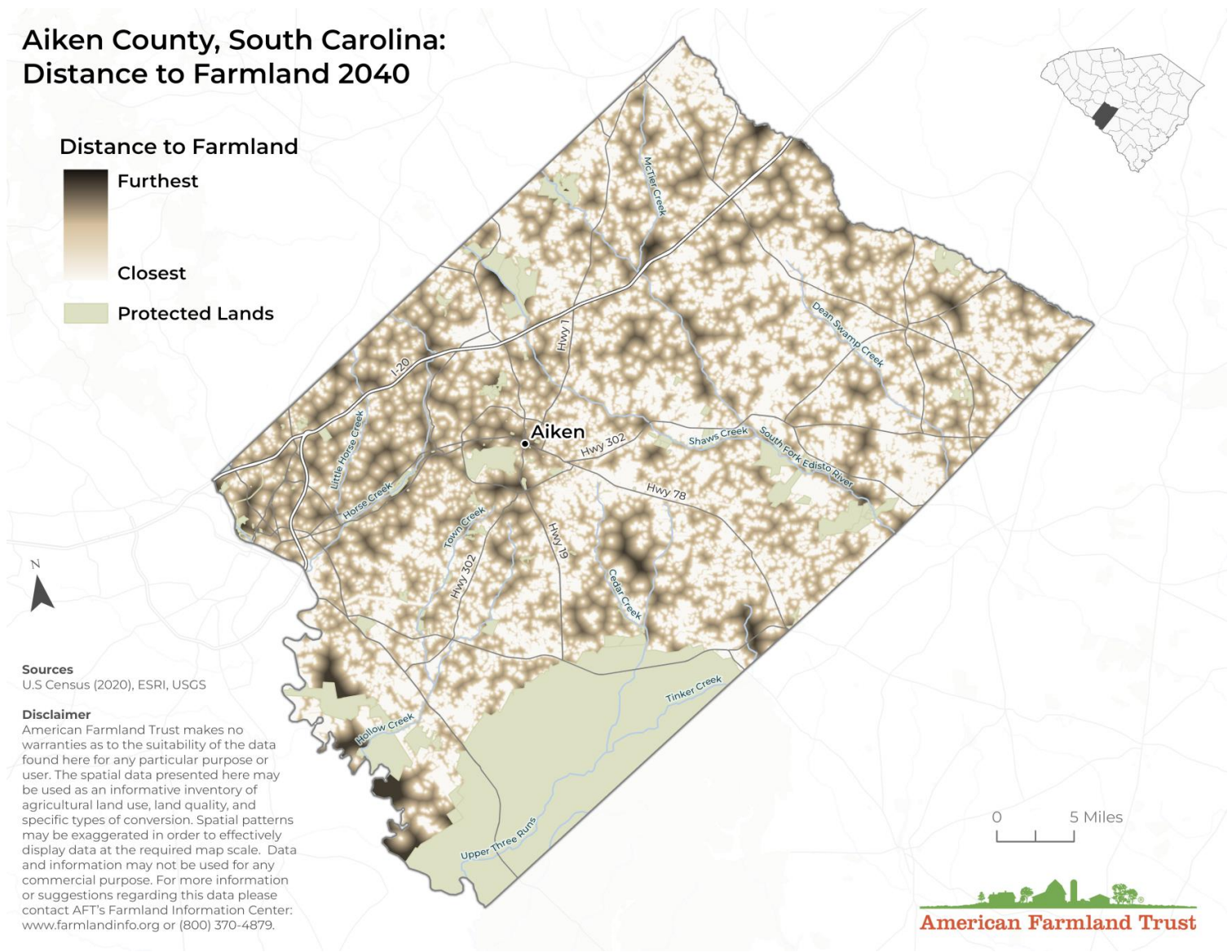
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0 5 Miles

The Aiken County Challenge:

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



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

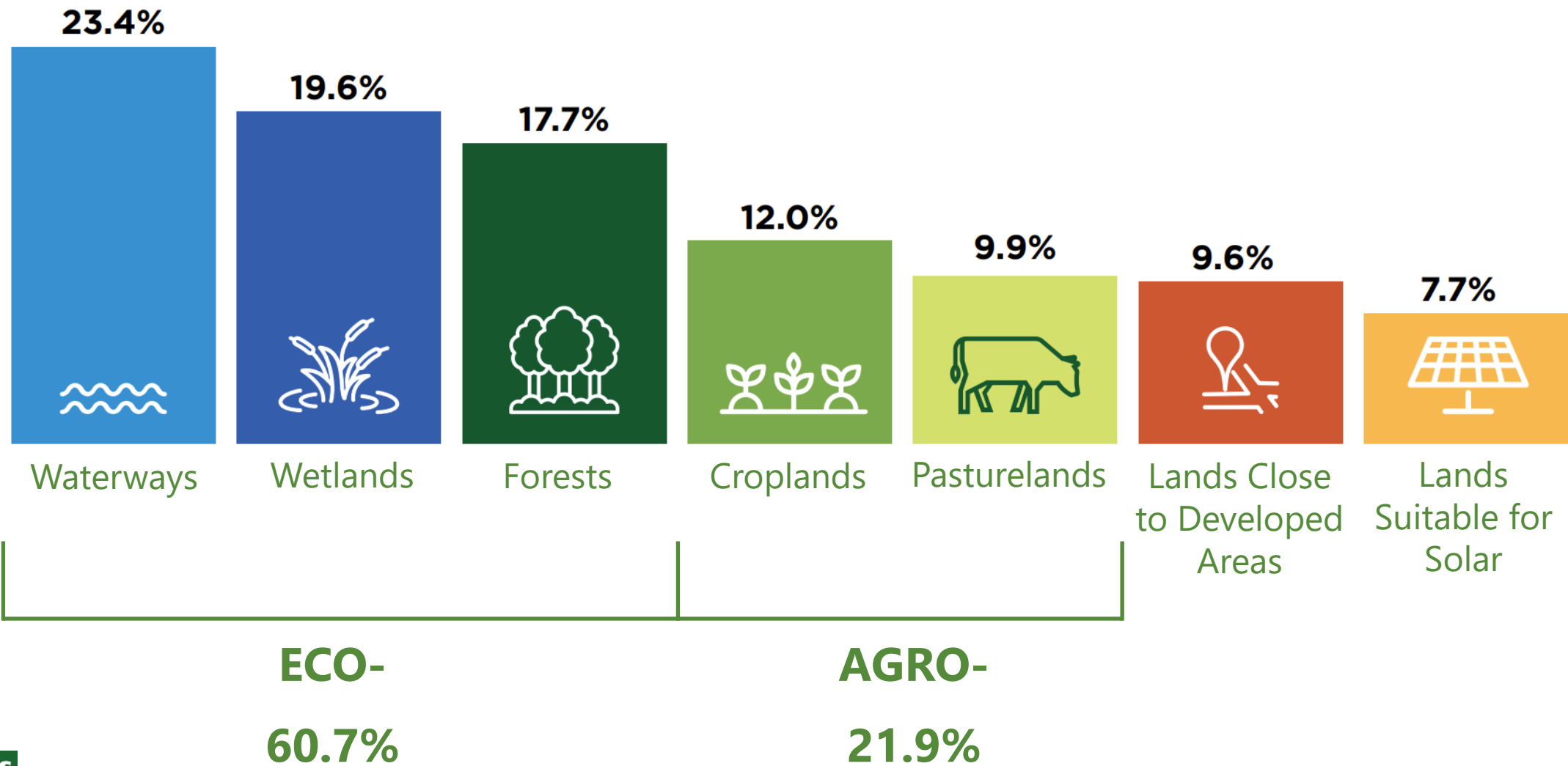
- | | |
|-------------|--|
| A. Crops | E. Lands Suitable for Solar |
| B. Forests | F. Waterways |
| C. Wetlands | G. Lands Close to Developed Areas |
| D. Pastures | H. Other: <u>Highly Suitable Soils</u> |

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

Analytic Hierarchy Process (AHP)

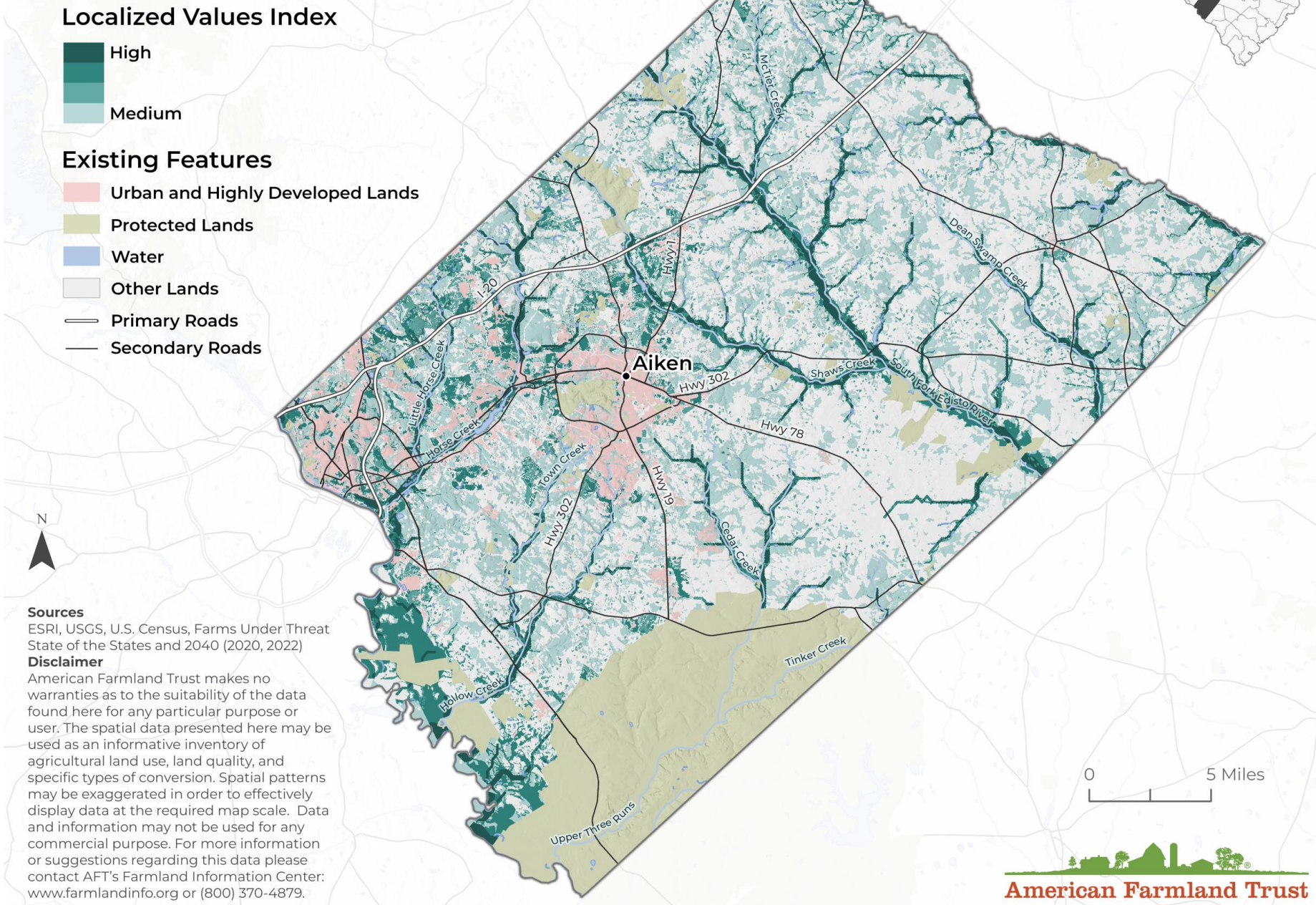
Helping to make decisions when tradeoffs have to be made

Protection Priority Survey



Localized values must be captured in decision-making

Aiken County, South Carolina: Localized Values Index



We can also integrate more specialized data

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

Projected Conversion (2040)

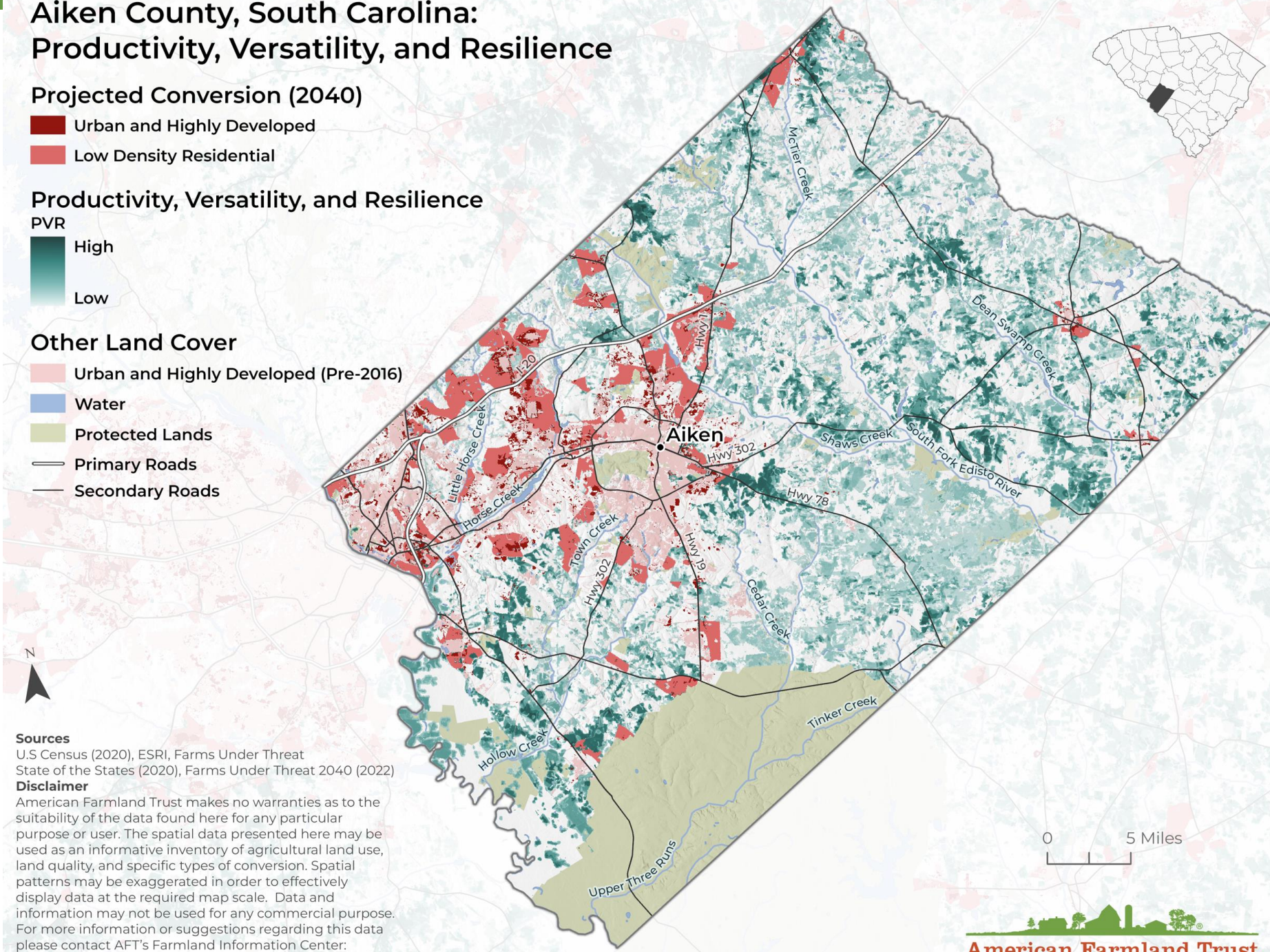
- Urban and Highly Developed
- Low Density Residential

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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How can we plan for agriculture in Aiken County?

Considerations:

Equine dominates the area

Fragmentation is compromising the area

Localized values want to protect agroecosystems

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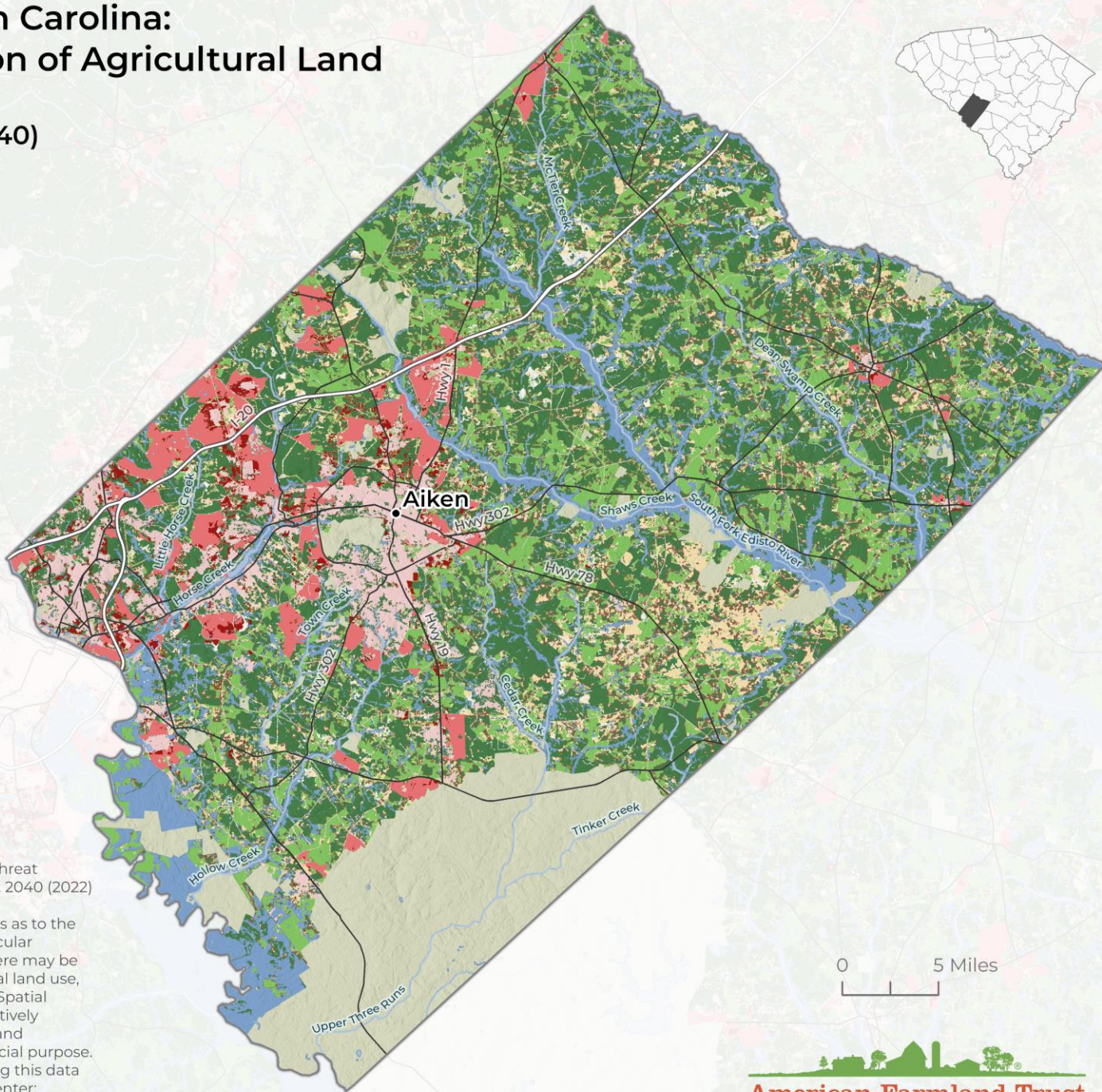
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- Secondary

Sources

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

American Farmland Trust
suitability of farmland
purpose or use
used as an indicator
land quality, and
patterns may vary
display data as
information is

For more information or suggestions regarding this data
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Showcase Opportunity

Protection Opportunity



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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