

Geography 305

Fall 2025

Final Mapping Project

**Foreign-Owned Land and Sensitive Infrastructure:  
A Geospatial Study of Tennessee**

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11 December 2025

# Introduction

- The purpose of this effort is to examine **how foreign-owned land geospatially relates to major national security and critical infrastructure sites in Tennessee.**
- This project is driven by the rising national concern of foreign landownership in the US:
  - Multiple state legislatures are evaluating risks associated with foreign ownership of land near sensitive facilities.
  - Tennessee contains several nationally significant security sites, such as Oak Ridge National Laboratory, Arnold Air Force Base, Holston Army Ammunition Plant, nuclear plants, and major water/energy infrastructure corridors.

# Background & Importance

## Context

- The US has seen a noticeable rise in foreign land purchases, everything from farmland to property located near sensitive infrastructure and even military facilities.
- A handful of these transactions have drawn public attention because of where they occurred and who bought them.
- Some of these deals are straightforward, but others involve layered business structures that make it difficult to determine who ultimately owns or controls the land.

## Why This Topic Is Geographically Important

- Land ownership is not just a legal issue; it's a spatial one. Patterns of ownership, clustering, and distance all play a role in how landscapes function and how people perceive risk or security.
- Mapping these patterns allows us to see relationships that are not obvious in a spreadsheet. It reveals how foreign-owned parcels sit within larger networks of infrastructure, sensitive areas, and human activity.
- From a geography perspective, this topic connects directly to core concepts: land use, spatial interaction, governance, and the ways people shape and are shaped by the places they live.

# Objective

- This mapping project explores how foreign-owned agricultural land is distributed across Tennessee and how these locations intersect with major infrastructure and national-security sites.
- The goal is not to draw conclusions but to reveal spatial patterns that can guide future discussion and research.
  - Where are Tennessee's major national-security and critical-infrastructure sites located, and how can they be categorized spatially?
  - What is the geographic distribution of foreign-owned agricultural land in Tennessee as reported under AFIDA?
  - Is there any observable spatial relationship between foreign-owned land and proximity to national security or critical infrastructure areas?

# National Security & Infrastructure Sites

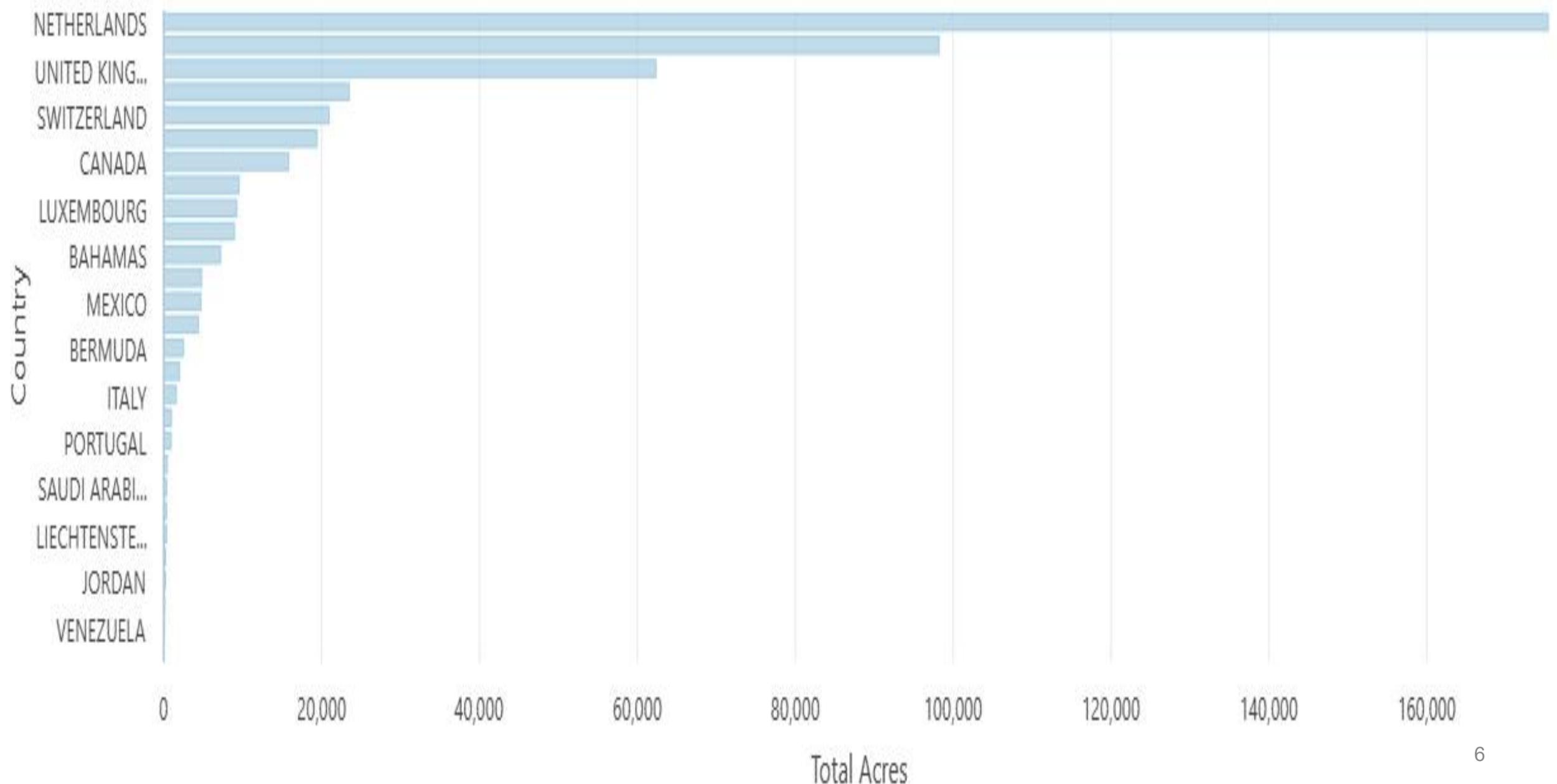
## National Security Sites

- **Oak Ridge Reservation:**
  - Y-12 National Security Complex
  - Oak Ridge National Laboratory (ORNL)
  - East Tennessee Technology Park (Historic K-25 Site)
- **Arnold Air Force Base**
- **Holston Army Ammunition Plant**

## Infrastructure Sites

- **TVA Nuclear Power Plants:**
  - Watts Bar
  - Sequoyah
- **Hydroelectric structures:**
  - Norris
  - Cherokee
  - Douglas, etc.
- **Major natural-gas pipelines & compressor stations**
- **Water supply intakes and reservoirs for major metro areas**

## Foreign Land Ownership in TN by Country (2023)



# Methodology

## Step 1

### Created Critical Energy & Defense Infrastructure

Using geocoded public information, create point or polygon features for:

- Y-12 National Security Complex
- Oak Ridge National Laboratory
- East Tennessee Technology Park
- Arnold AFB
- Holston Army Ammunition Plant
- TVA nuclear plants (Watts Bar, Sequoyah)
- Major hydro dams and energy infrastructure.

## Step 2

### Identify Foreign-Owned Land

- Download USDA AFIDA & EIA spreadsheets.
- Filter for State = Tennessee
- Remove metadata (section headers).
- Extract values where Country = All Foreign Countries.
- Summarize total acres per Tennessee county.
- Join the data to a Tennessee county polygon layer.
- Unique values & natural breaks (5 Classes) foreign-owned agricultural acres

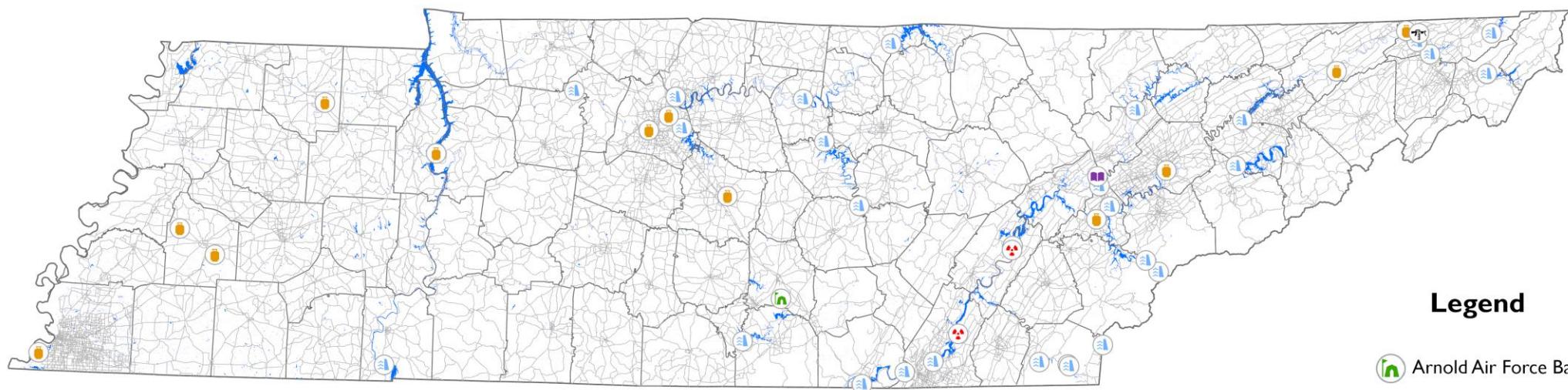
## Step 3

### Created Maps

- Country Bar Graph of Land Ownership in TN
- Critical Industry Defense Infrastructure in TJN
- Foreign Land & Critical Energy Infrastructure in TN
- Composition of Foreign-Owned Land by Country in TN Counties (2023 – Sensitive Infrastructure)

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# Critical Energy and Defense Infrastructure in TN



## Legend

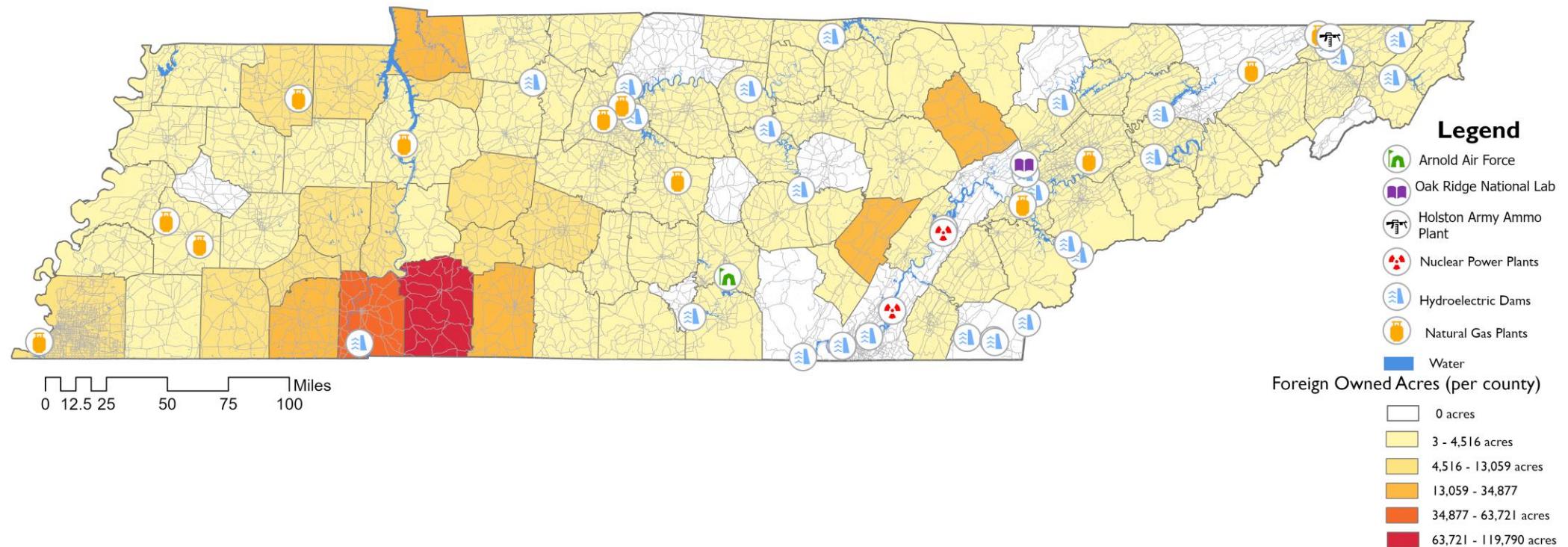
0 12.5 25 50 75 100 Miles

- Arnold Air Force Base
- Holston Army Ammunition Plant
- Oak Ridge National Lab
- Nuclear Plants
- Natural Gas Plants
- Hydroelectric Plants
- Road Centerlines
- State Boundary
- Water

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# Foreign Owned Land & Critical Energy Infrastructure in Tennessee (2023)

Foreign Land Holdings by County with Tennessee Energy Infrastructure Overlay

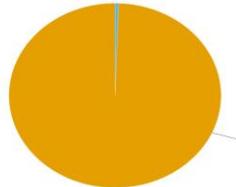


# Composition of Foreign-Owned Land by Country in Tennessee Counties (2023)



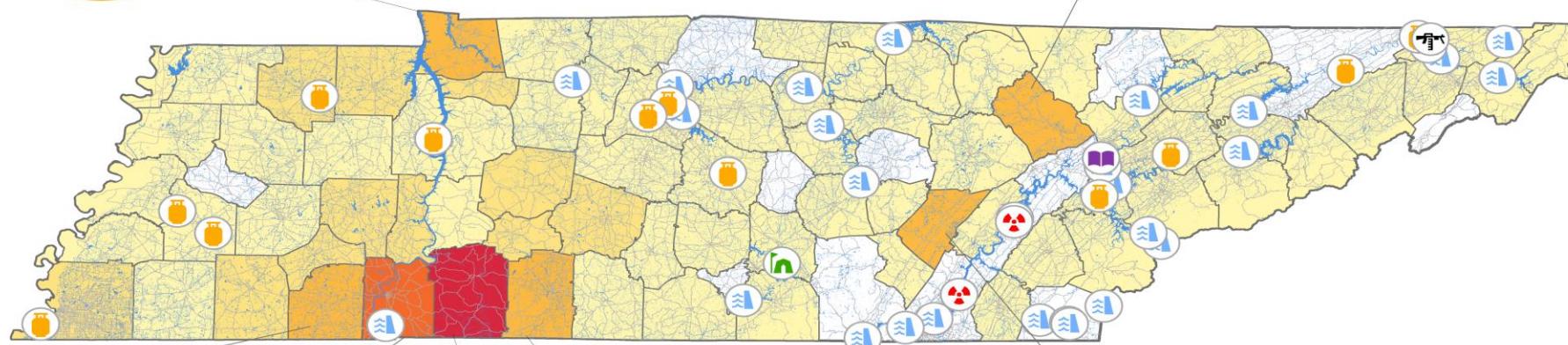
Morgan County (20,320 acres)

Stewart County (34,877 acres)



Canada — 34,695 acres (99.5%)  
Switzerland — 182 acres (0.5%)

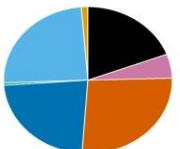
No Predominant Country — 20,320 acres (100.0%)



## Legend

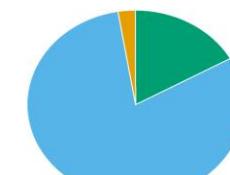
- Arnold Air Force Base
- Holston Army Ammunition Plant
- Oak Ridge National Lab
- Nuclear Plants
- Natural Gas Plants
- Hydroelectric Dams
- Water
- Road Centerlines

McNairy County (27,763 acres)



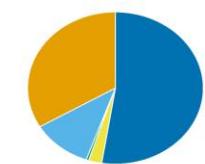
Belgium — 348 acres (1.3%)  
Canada — 6,762 acres (24.4%)  
France — 143 acres (0.5%)  
Ireland — 1 acres (0.0%)  
Liechtenstein — 6,315 acres (22.7%)  
Luxembourg — 7,374 acres (26.6%)  
Switzerland — 1,476 acres (5.3%)  
United Kingdom — 5,345 acres (19.3%)

Lawrence County (21,982 acres)



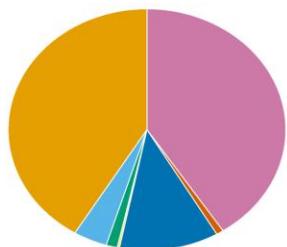
Luxembourg — 569 acres (2.6%)  
Netherlands — 17,701 acres (80.5%)  
Switzerland — 3,712 acres (16.9%)

Bledsoe County (21,498 acres)



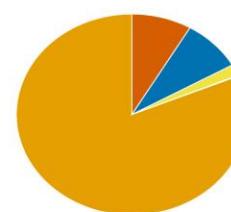
Bahamas — 7,200 acres (33.5%)  
Belgium — 2,384 acres (11.1%)  
Denmark — 100 acres (0.5%)  
Netherlands — 526 acres (2.4%)  
Switzerland — 11,288 acres (52.5%)

Hardin County (62,808 acres)



Canada — 25,950 acres (41.3%)  
Germany — 2,472 acres (3.9%)  
Ireland — 820 acres (1.3%)  
Luxembourg — 161 acres (0.3%)  
Netherlands — 7,266 acres (11.6%)  
Switzerland — 525 acres (0.8%)  
United Kingdom — 25,614 acres (40.8%)

Wayne County (119,790 acres)



Netherlands — 97,372 acres (81.3%)  
France — 10 acres (0.0%)  
Portugal — 136 acres (0.1%)  
Switzerland — 2,162 acres (1.8%)  
United Kingdom — 10,052 acres (8.4%)  
Canada — 10,058 acres (8.4%)

## Foreign Owned Acres

- 3 - 4,516 acres
- 4,516 - 13,058 acres
- 13,058 - 34,877 acres
- 34,877 - 63,721 acres
- 63,721 - 119,790 acres

# Conclusions

- Foreign-owned land is unevenly distributed, with larger concentrations in agricultural counties rather than urban counties.
- Some foreign-owned acreage falls within regional proximity bands of Tennessee's national-security infrastructure but not necessarily clustered tightly around high-security sites, due to AFIDA's agricultural focus.
- The Oak Ridge Reservation region has fewer foreign agricultural holdings due to topography, limited farmland, and the dominance of existing federal land. At the same time, western and middle Tennessee show more agricultural activity.
- The highest foreign landowners in TN are the Netherlands (1) with over 150,000 acres and the UK (2) with just under 100,000 acres, followed by Switzerland (3) and Canada (4). China is barely visible in the TN data sets, but this could be because of the limitations on the data, plus the clarity when properties are acquired through shell companies, holding corporations, or other intermediaries

# Data Sources

## Foreign Land Ownership Data

USDA AFIDA (Agricultural Foreign Investment Disclosure Act) – Foreign Holdings of US Agricultural Land (2010–2023)

- County-level acreage amounts
- Breakdown by country

## Critical Infrastructure and National Security Data

- Open-source mapping tools
- EIA (US Energy Information Administration)
- Used EIA to identify repositories for dams, waterways, and major utilities
- These sources provide general locations, suitable for academic analysis, without disclosing sensitive details.

## Base Layers

- Tennessee counties shapefile

## Limitations

- AFIDA reports agricultural land only, not industrial or residential property. Does not identify specific parcels, only county totals.
- AFIDA data is self-reported and may contain under-reporting or opaque ownership structures.
- Parcel-level foreign ownership is not publicly available; county-level aggregation is used instead.