



GRAHAM SUSTAINABILITY INSTITUTE
CENTER FOR
EMPOWERING COMMUNITIES
UNIVERSITY OF MICHIGAN

Large Scale Solar and Rural Land Ownership Trends: Data and Stories from Across the Country

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Background

- **Solar energy buildout is accelerating:** Rapid growth in large-scale solar (LSS) is increasing demand for rural land.
- **Farmland pressures are also intensifying:** Farmland access is already constrained by long-standing trends, increasing investor ownership, and rising land costs, making it more difficult for small, midsize, beginning, and underserved farmers to secure and retain land.
- **High stakes for host communities:** LSS can generate local tax revenue and lease income (which may be concentrated among larger landowners), but development may further tighten farmland availability, reshape rental markets, and alter patterns of land tenure in ways that disadvantage smaller producers.
- **Ownership patterns are central:** Differences between local vs. absentee and family vs. investor ownership determine who benefits and who faces increased barriers to land access.
- **Why this matters:** Small and midsize farmers are more likely to produce diverse crops, use sustainable practices, and supply local markets, yet they face disproportionate barriers to land access due to persistent structural inequities.

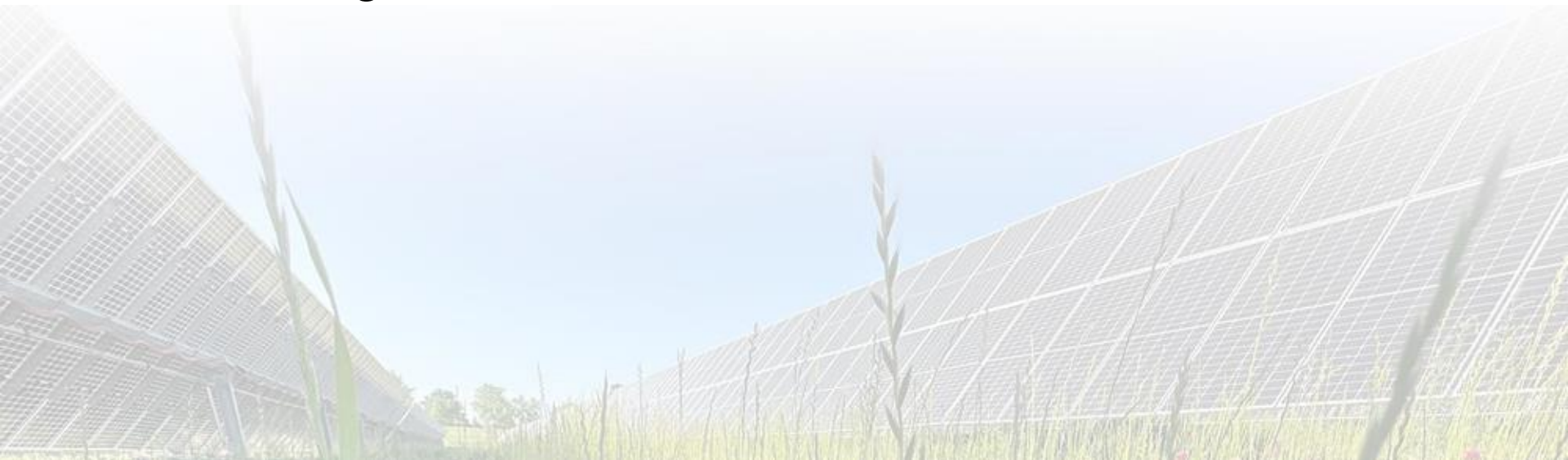
Project Objective:

Conduct a mixed-methods analysis of trends in Large-Scale Solar (LSS) land ownership in rural U.S. counties, combining parcel-level ownership data and landowner interviews to analyze land tenure, farming activities, and ownership in the context of LSS development and changes in U.S. rural land ownership.

Mixed-Methods Design:

- **LSS Parcel Data Analysis:** Build and analyze a parcel dataset in 8 counties in 8 states.
- **Interviews:** Conduct ~12 interviews with landowners and tenant farmers/land users, sampled across local vs. absentee ownership and individual/farm vs. corporate/investor ownership.

LSS Parcel Data Analysis Objectives, Data & Methods



Research Questions:

- Does solar reflect the rural land ownership patterns of its host community, or are there noticeable differences in ownership types and locations?
- Is there variability in solar land ownership trends in different agricultural regions of the country?

Approach:

- County-level parcel-level analysis in 8 counties in 8 states purposively selected from different USDA agricultural regions.

County Selection Process:

To identify a diverse set of eight counties for analysis, we:

- Used the [USPVDB](#) (accessed 09/2024) filtered to counties with at least two LSS projects >5 MW, including one >10 MW.
 - **Result:** 209 eligible counties.
- Further sampled based on farm economy type/region ([USDA Farm Resource Regions](#)) and, as a proxy to assess absentee land ownership, percent of agriculture land rented ([USDA Ag Census 2022](#)).
- Within each region, selected the county with the greatest solar development while maximizing geographic and agricultural diversity.
- Tie breakers: State with higher overall solar deployment, with larger percentage of overall land area in agriculture ([USDA Ag Census 2022](#), [US Census 2023](#)).
- Also checked [metro vs. non-metro](#) and [crop vs. pasture mix](#) to confirm selected county was reasonably representative of the full set of eligible counties.

Selected 8 Counties

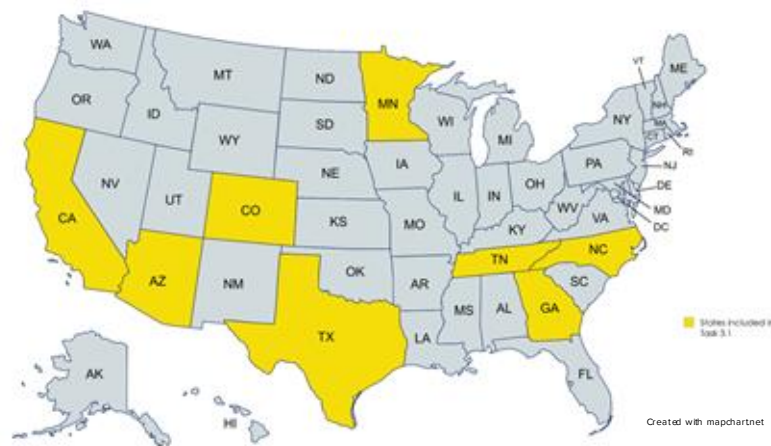
ALL 8 COUNTIES

County ERS Regions: 1, 3-8

Ratio of rented ag land in county: 11 - 65%

of solar projects in county: 3 - 26

Largest solar project in county: 10 - 420 MW



TULARE, CA

ERS Region: 7 (Fruitful Rim)

Ratio of rented ag land: 25.9%

of solar projects: 26

Largest solar project: 56 MW

WELD, CO

ERS Region: 3 (Northern Great Plains)

Ratio of rented ag land: 30.1%

of solar projects: 21

Largest solar project: 16 MW

WASECA, MN

ERS Region: 1 (Heartland)

Ratio of rented ag land: 52.1%

of solar projects: 13

Largest solar project: 10 MW

RUTHERFORD, NC

ERS Region: 5 (Eastern Uplands)

Ratio of rented ag land: 20.7%

of solar projects: 9

Largest solar project: 75 MW

MOHAVE, AZ

ERS Region: 8 (Basin and Range)

Ratio of rented ag land: 11.2%

of solar projects: 4

Largest solar project: 46 MW

ANDREWS, TX

ERS Region: 4 (Prairie Gateway)

Ratio of rented ag land: 65%

of solar projects: 4

Largest solar project: 420 MW

MADISON, TN

ERS Region: 9 (Mississippi Portal)

Ratio of rented ag land: 41%

of solar projects: 3

Largest solar project: 70 MW

MITCHELL, GA

ERS Region: 6 (Southern Seaboard)

Ratio of rented ag land: 39.5%

of solar projects: 4

Largest solar project: 196 MW

Data Preparation:

- Linked LSS projects (USPVDB polygons/attributes) to Lightbox parcel records.
- Limited the analysis to rural parcels by excluding parcels within census-designated (i.e. “urban”) places.
- Removed records with missing tax year, owner information, or other invalid data.
- Generated unique parcel-owner IDs to track multi-project, multi-parcel, and multi-owner ownership.

Key Lightbox Fields:

- Owner name (owner type)
- Owner mailing address (residency)
- Common ownership count (co-ownership)
- Tax year (ownership validation)
- Lot size (land area)

Ownership Type Characterization:

- Classified entity types using a combination of Excel screening and keyword flagging (e.g., business suffixes, public institution terms, trust/estate terms).
- Refined classification rules through iterative testing and manual review of ambiguous records.
- Identified energy companies by building a full USPVDB reference list of repeat solar landowners and cross-referencing against county owners.

Owner Location Characterization:

- Geocoded owner mailing addresses to identify county and state locations.
- Multi-parcel ownership was measured by land area, not parcel count.
- Classified owners into one of three mutually-exclusive categories:
 - **Local/in-county**: mailing address and parcel are in the same county.
 - **Out-of-county, in-state**: mailing address and parcel are in the same state but different counties.
 - **Absentee/out-of-state**: mailing address and parcel are in different states/countries.
- For multi-owner parcels, split land area equally among owners.

Full sample:

223,181

Total number of parcels

153

Total number of
solar parcels

84

Total number of solar
projects

LSS Parcel Data Analysis Differences in Ownership Across All Counties

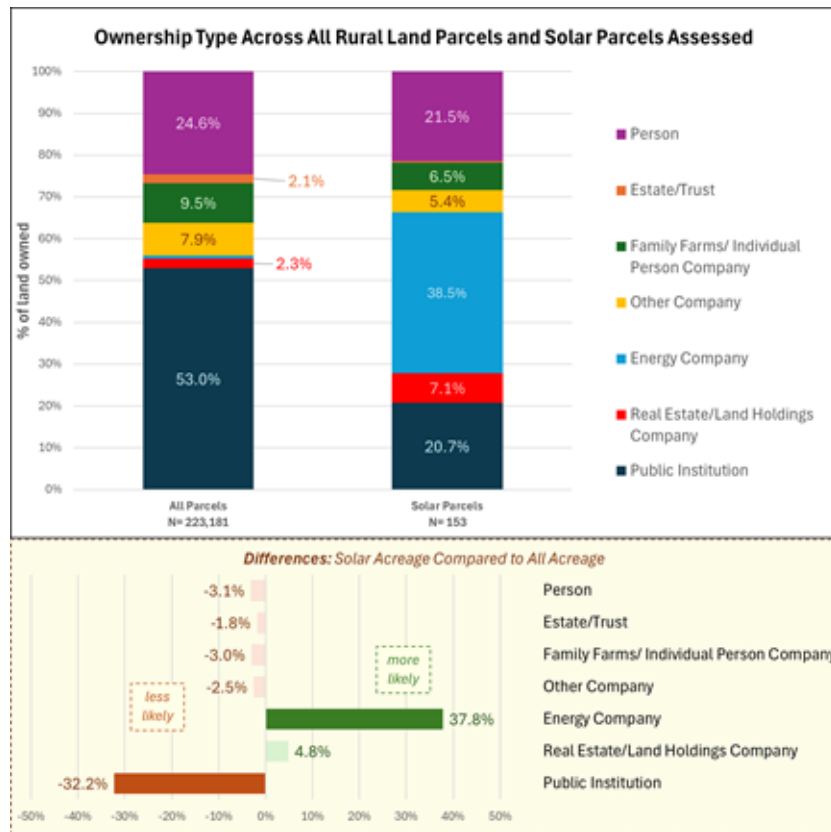


How to Read the Figures Ahead:



- **Vertical bar graphs** compare ownership by land area for all parcels (left) and solar parcels (right). Colors identify owner type/location, making it easy to see which groups are most common in each dataset.
 - Example: Out-of-state landowners own 8.9% of all acreage in the study and 37.0% of solar parcel acreage.
- **Horizontal bar graphs** show the difference between the two vertical bars for each category represented. Green indicates a category is more common among solar parcels, while orange indicates it is less common.
 - Example: Solar parcels are 28.1% more likely to be owned out-of-state landowners (37.0% vs. 8.9%).

Differences in Ownership Across 8 counties: Type



Energy Company Dominance

Energy companies own 38.5% of solar land (+7% holding companies), suggesting an increased pressure on rural land ownership.

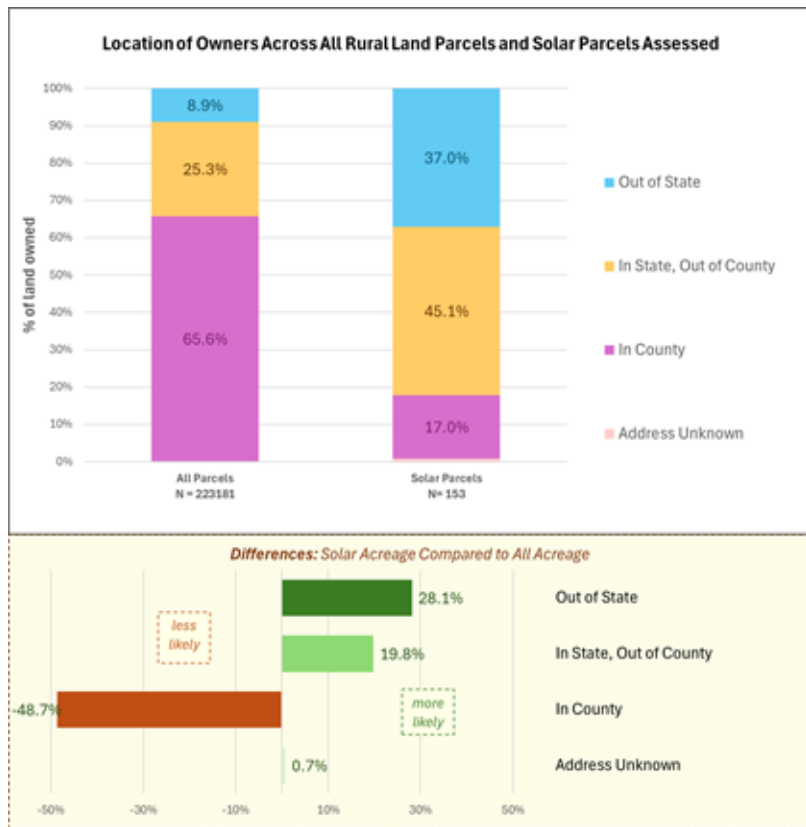
Local Ownership Resilience

Person/family ownership is only ~3% lower for solar land, suggesting patterns of retained ownership and local resistance to financialization.

Public Institution Gap

Public institutions own 20% of solar parcel acreage compared with 53% of all parcel acreage, likely reflecting developers' avoidance of public land.

Differences in ownership across 8 counties: Location



Out-of-State Ownership Shift

Solar parcels are 28 percentage points more likely to be owned by out-of-state owners, indicating a strong association with absentee ownership.

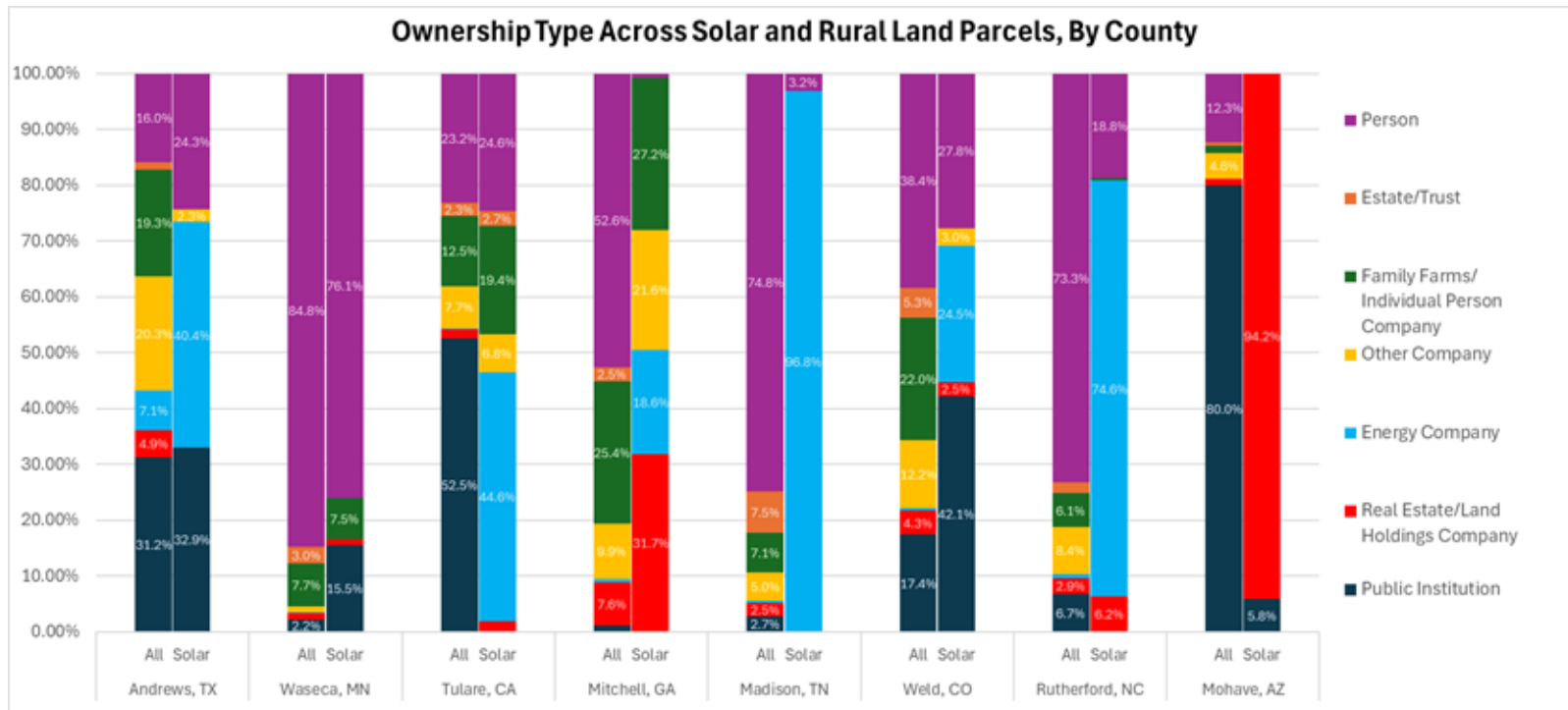
In-State, Non-Local Ownership Growth

Solar parcels are also ~20 percentage points more likely to be owned by out-of-county owners, suggesting that in-state benefits may not always remain in the host community.

Local Ownership Drop

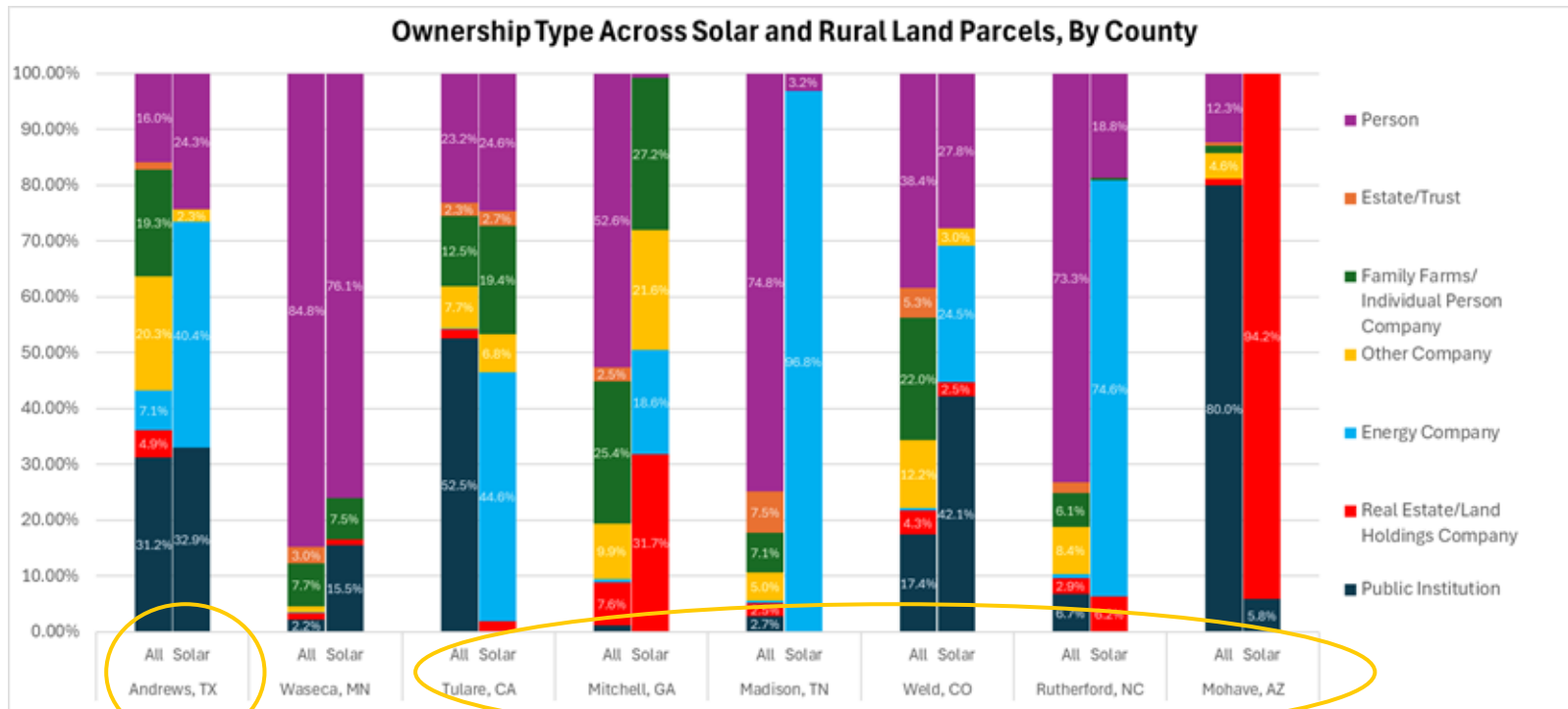
In-county ownership drops from 65% of all rural land to 17% for solar land, indicating a major shift away from local ownership (though patterns vary significantly by county).

Comparing 8 Diverse Counties: Owner Type



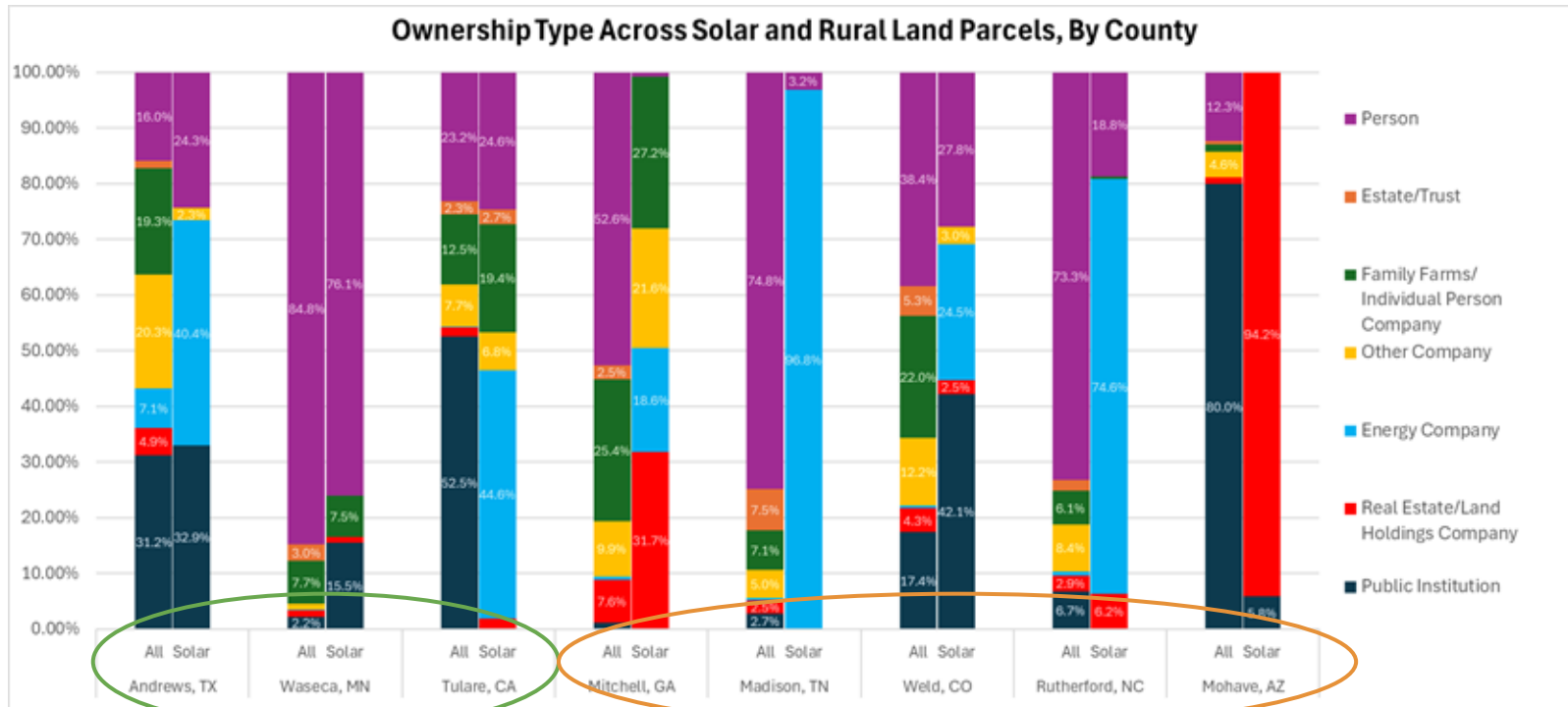
Ownership patterns vary considerably across counties

Comparing 8 Diverse Counties: Owner Type



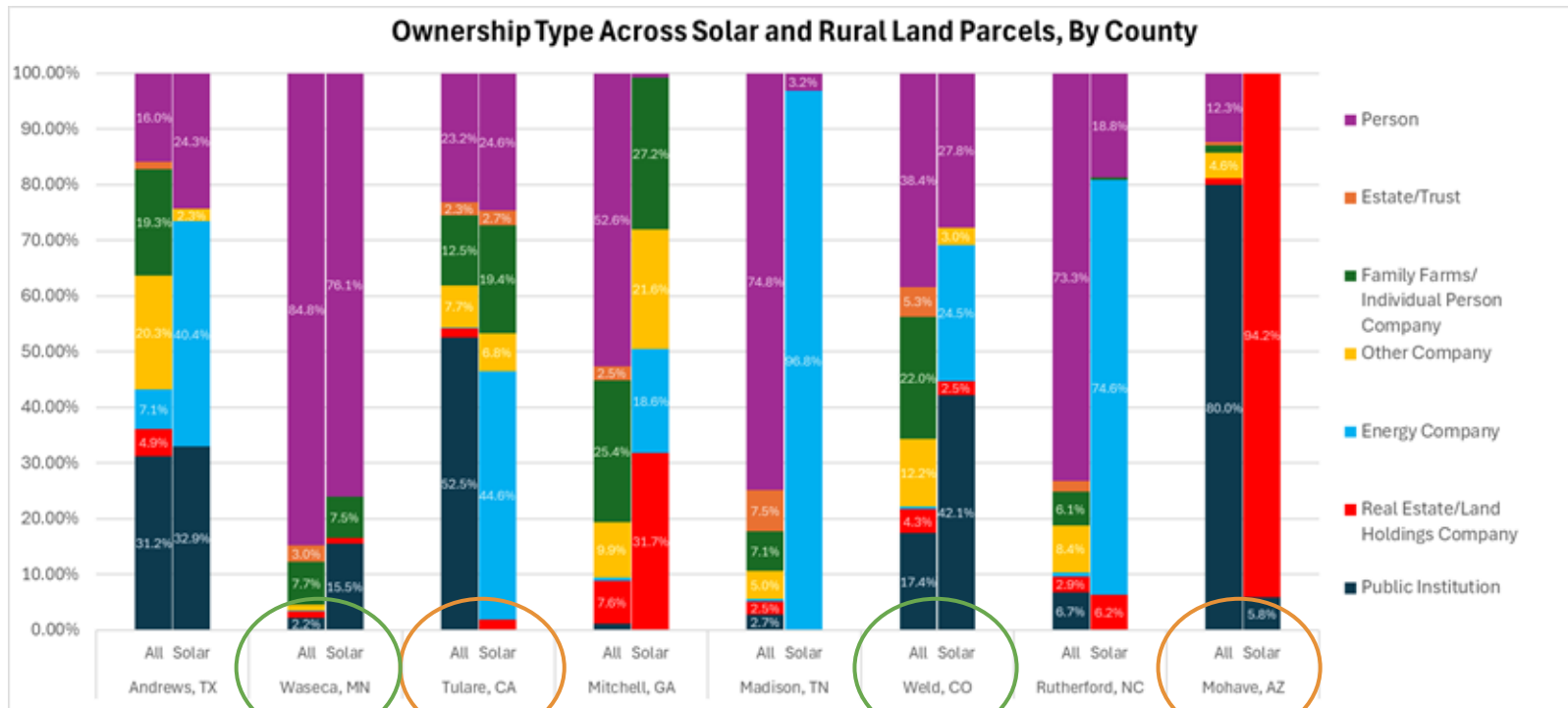
7 counties have significantly greater energy/holding company ownership of solar parcels.

Comparing 8 Diverse Counties: Owner Type



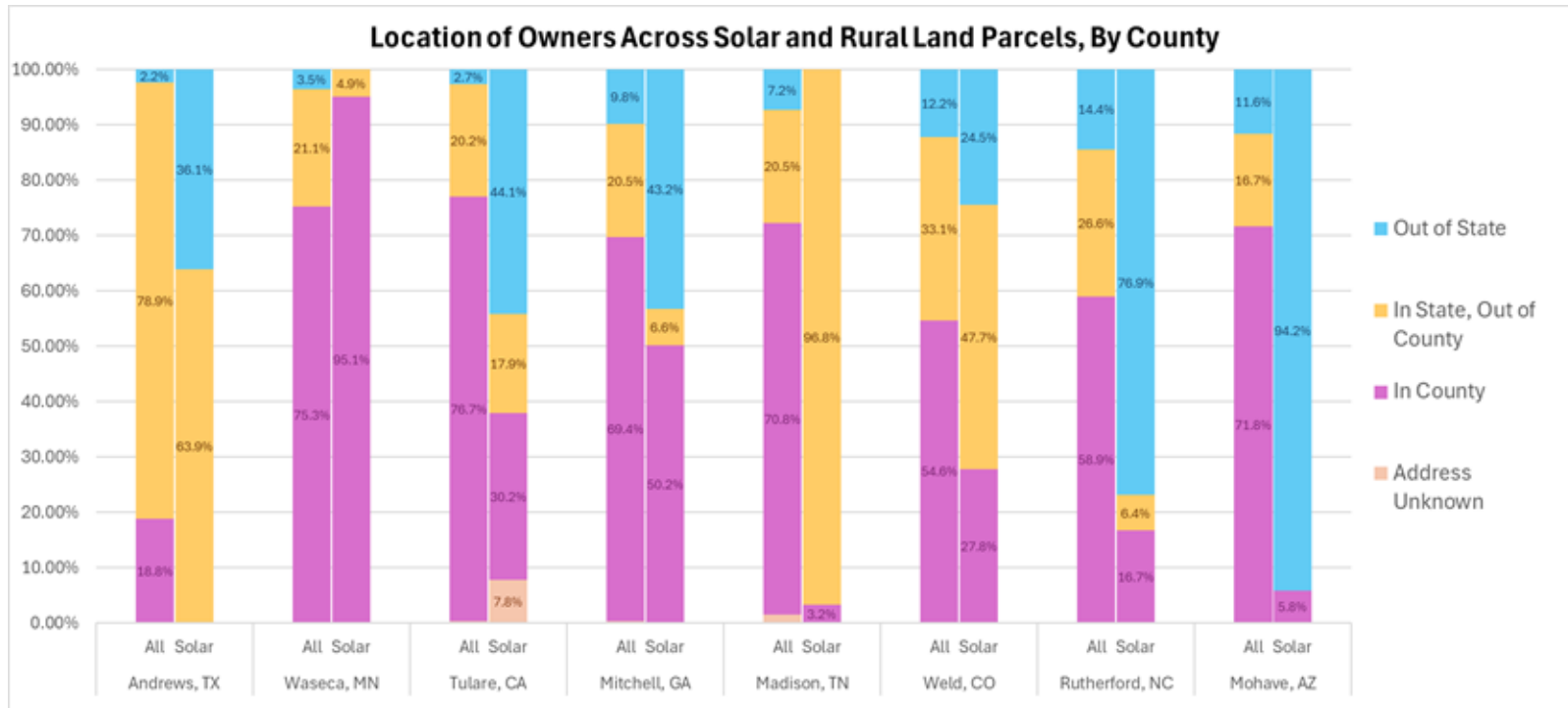
5 of the 8 counties have significantly lower person/family ownership, but 3 have similar levels of family parcel ownership for solar parcels.

Comparing 8 Diverse Counties: Owner Type



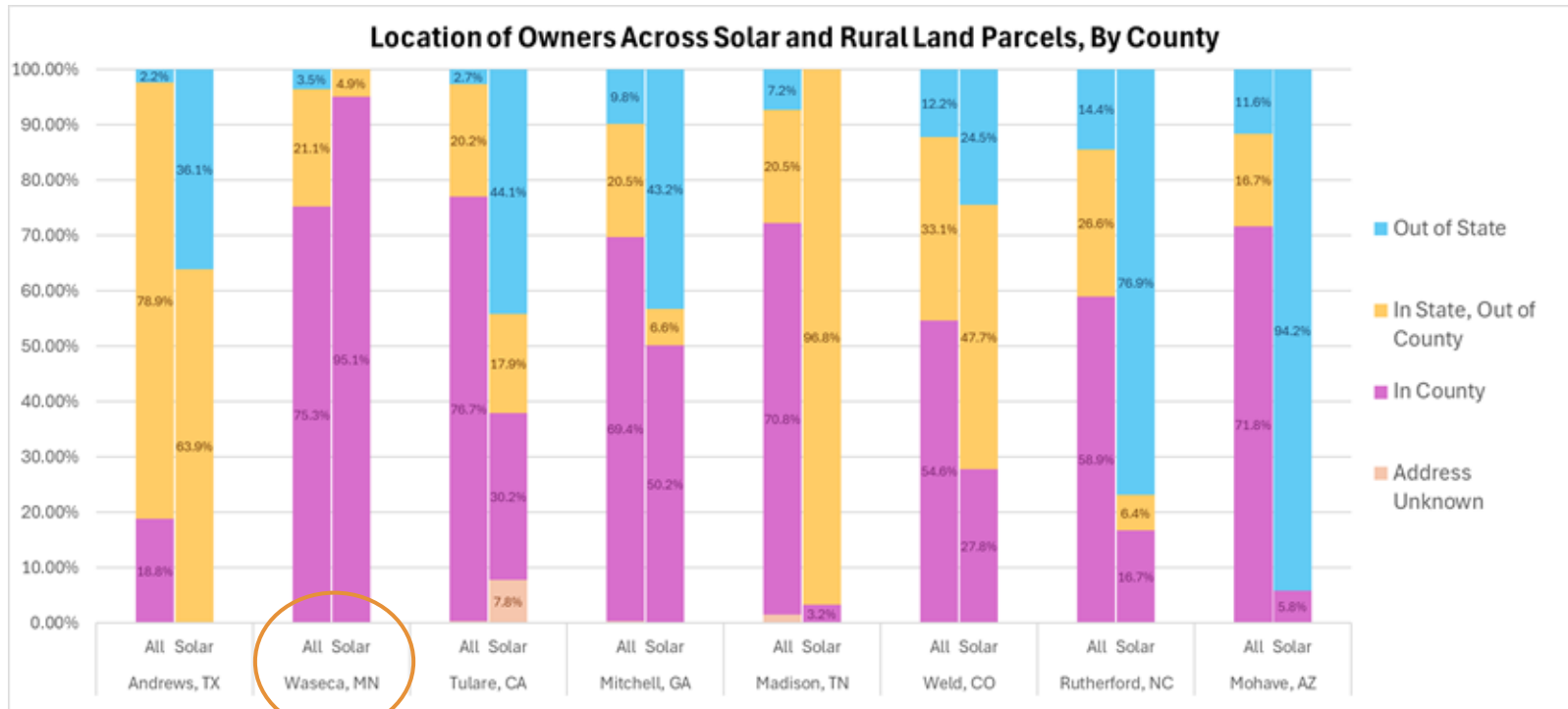
2 counties drive full-sample decrease in public institution ownership results of solar land, with 2 seeing increases in public solar land ownership, and the other 4 largely unchanged.

Comparing 8 Diverse Counties: Location of Owners



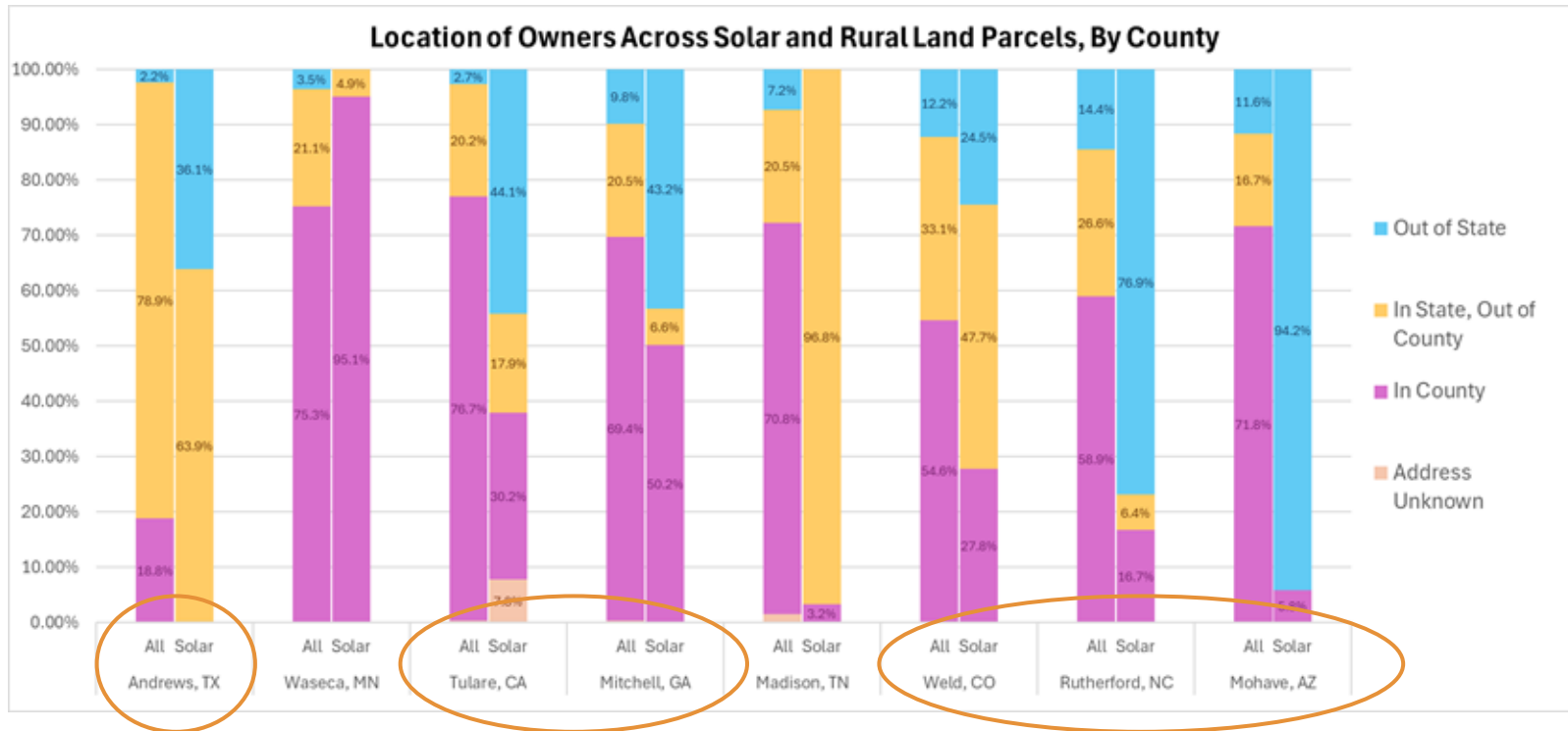
There is significant variation across counties in the location of solar land owners.

Comparing 8 Diverse Counties: Location of Owners



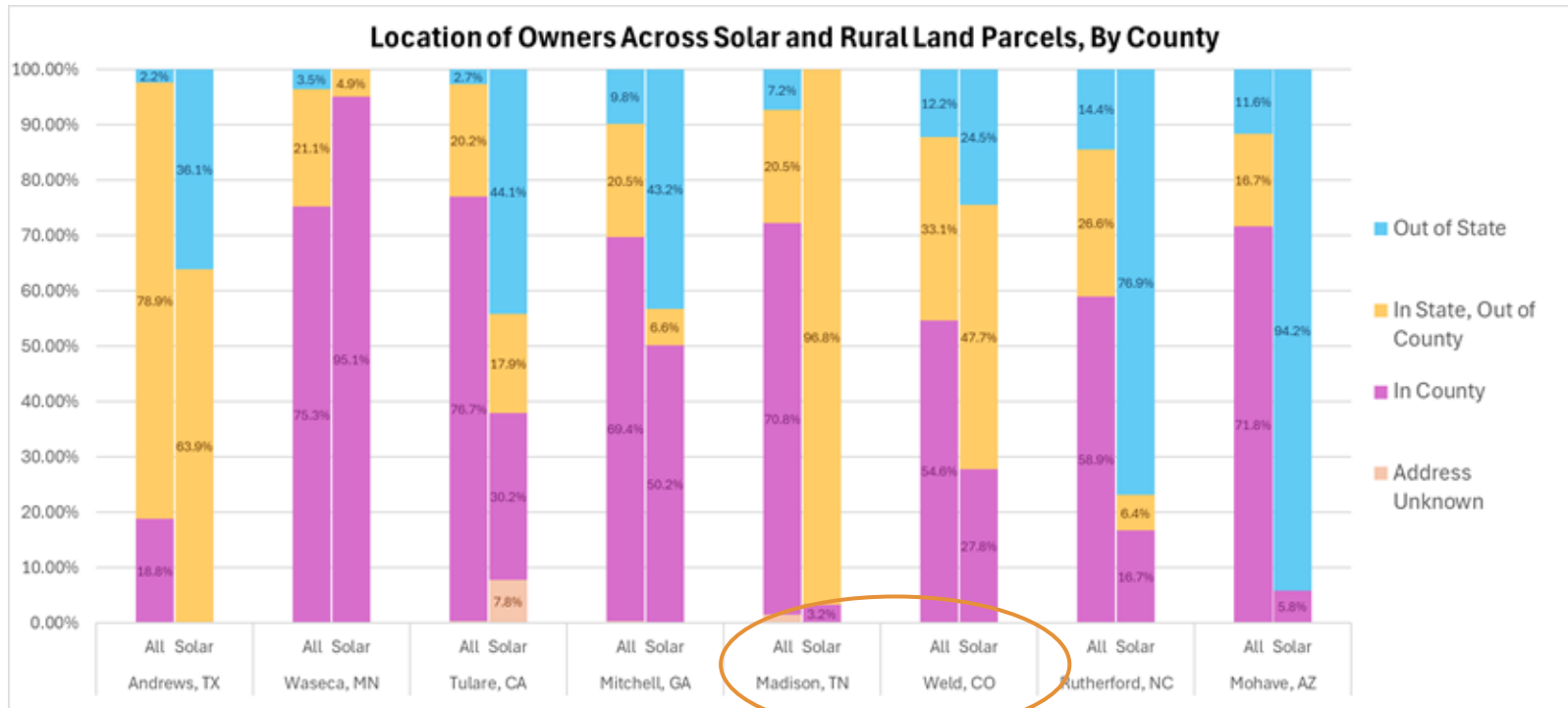
7 of the 8 counties see less in-county ownership of solar vs all rural parcels - all but Waseca, MN

Comparing 8 Diverse Counties: Location of Owners



6 of those counties see increases in out-of-state ownership.

Comparing 8 Diverse Counties: Location of Owners

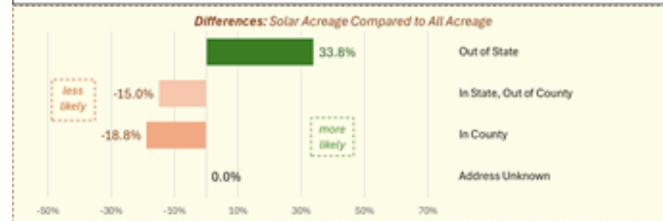
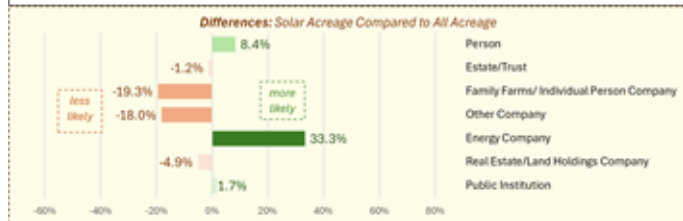
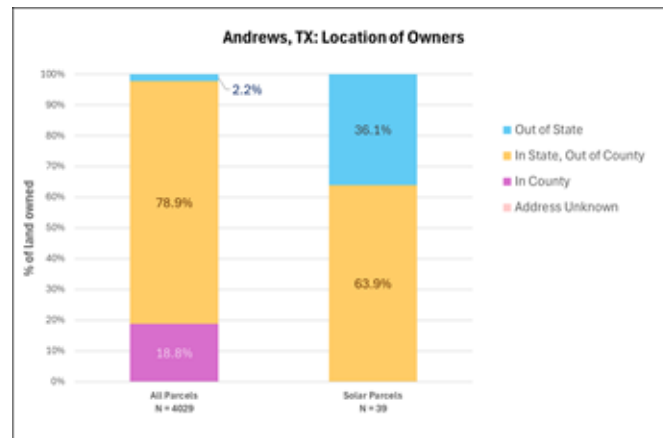
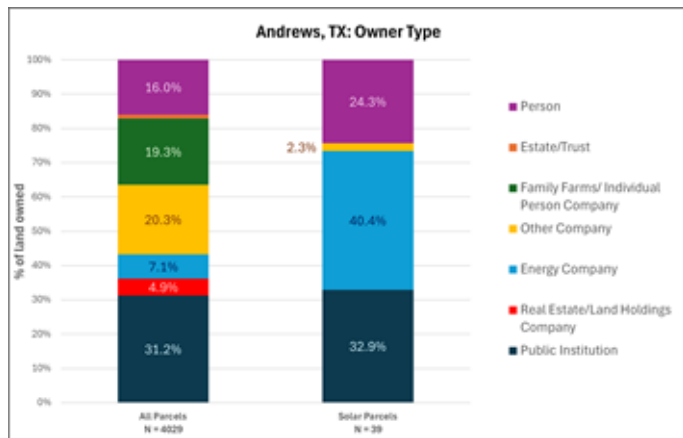


2 see increased in-state, out-of-county solar land ownership vs all land ownership.

LSS Parcel Data Analysis Individual County Results



Differences in Ownership: Andrews, TX



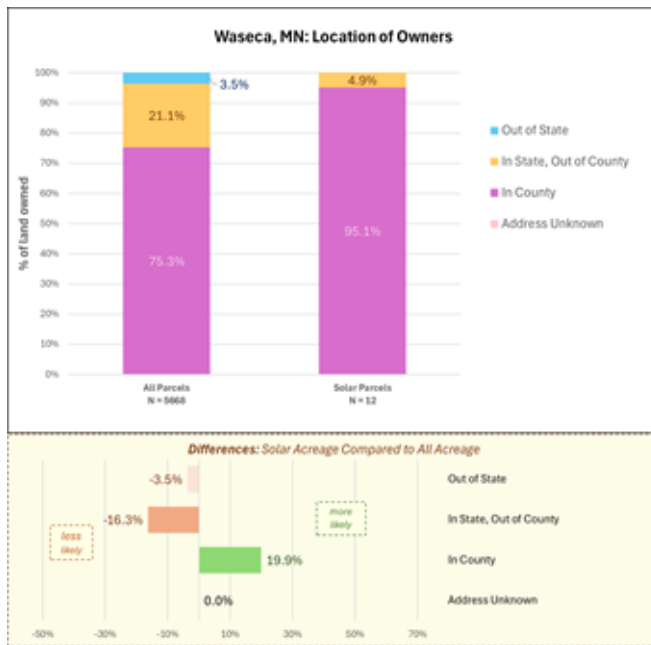
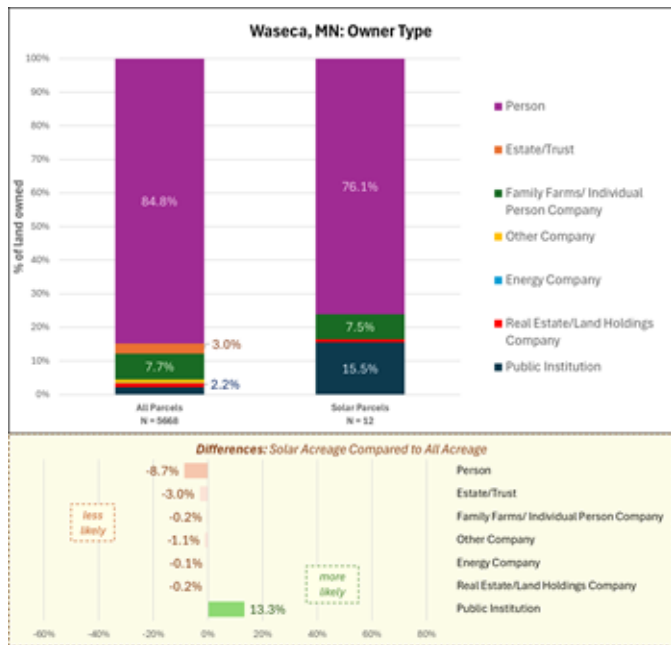
Key Takeaway:

In Andrews, while individual person ownership of solar land is higher than the overall trend in the community, it appears that existing trends in absentee ownership have been exacerbated, and corporate ownership is higher than ownership by community-associated entities for solar parcels.

Solar development in Andrews reflects conflicting forces in the trends for ownership type and location of owners.

- There is a relative increase in-person ownership, however, in-county ownership among solar parcels—while already low—is 0% in Andrews.
- Ownership by energy companies is 33.3% for solar land, indicating some corporate consolidation of land, in addition to the increased absentee ownership.
- Notably, the public institution ownership of solar parcels represents a large state university unaffiliated with, and at a physical distance from, the community in Andrews.

Differences in Ownership: Waseca, MN



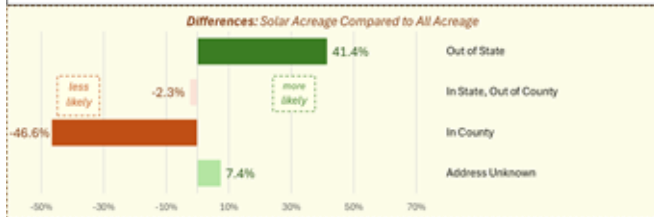
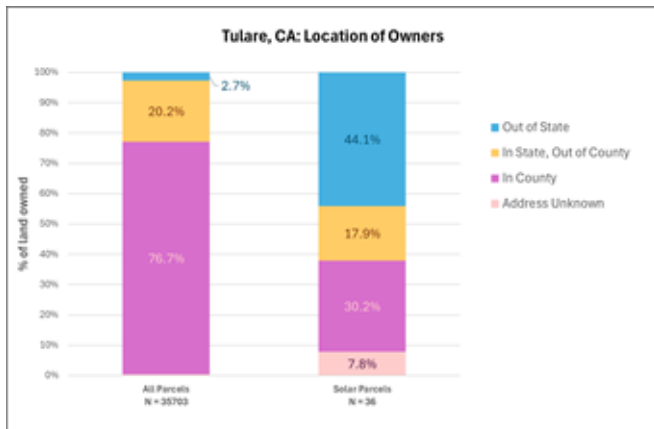
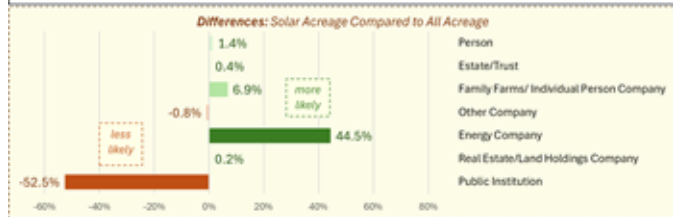
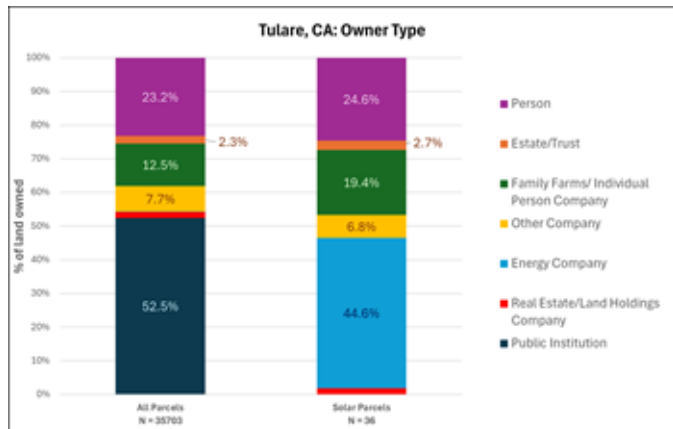
Key Takeaway:

In Waseca, local community-associated entities retain land ownership (and lease payment benefits) from solar development opportunities, and therefore they are not captured by in-state or in-county investors.

Solar development in Waseca has largely preserved and in some cases strengthened local ownership.

- While there is a relative decline in individual person ownership, the distribution of solar owners reflects retained local ownership (persons, family companies, public institutions).
- Ownership by public institutions is 13.3% more likely for solar land than for rural land overall. This difference reflects participation by Waseca County gov. in solar development.
- Importantly, in-county ownership increases to 95.1% for solar land vs. 75.3% for all rural land, a notable 19.9 point difference.
- *This county is featured in the Interview section of this slide deck, providing further context.*

Differences in Ownership: Tulare, CA



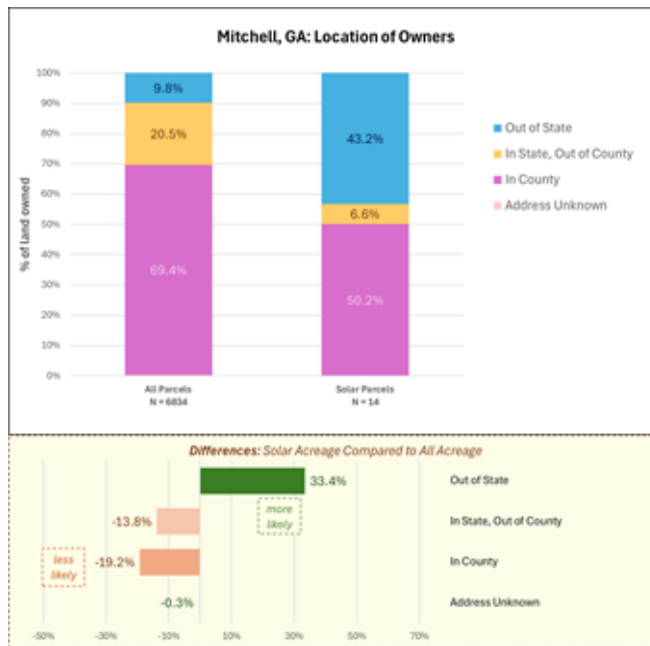
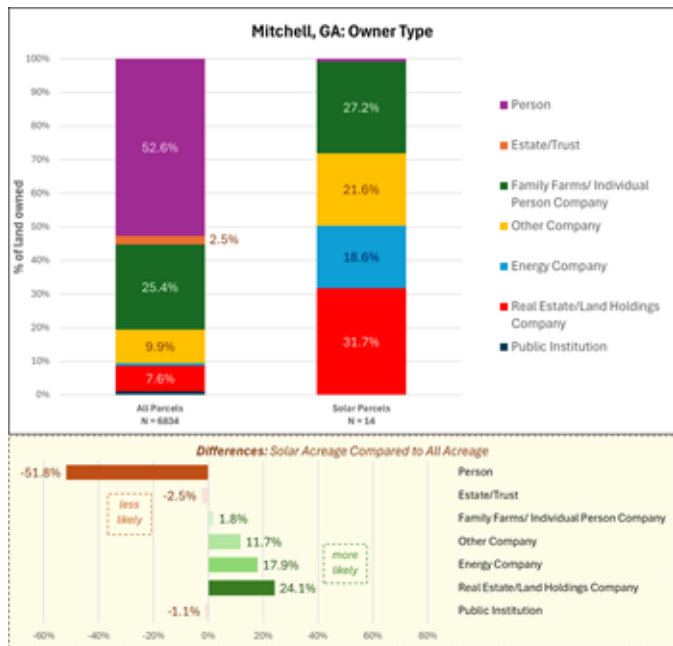
Key Takeaway:

In Tulare, there is some retention of community-linked entities for solar parcels, such as in-county persons and families. But, out-of-state corporate solar parcel ownership indicates a significant shift from average ownership patterns.

Solar development in Tulare reflects loss in local ownership, although there is some retention in key categories.

- Across multiple solar projects, energy companies have come to own the underlying land; such ownership is 44.5% more likely than in the overall rural baseline.
- Public institution ownership of rural land in Tulare represents a large variety of city, state, and federal entities, but is 0% for solar parcels, likely indicating developer preferences.
- Tulare overall has strong in-county ownership of rural land; among solar parcels, this appears to be displaced with 41.4% more likely out-of-state ownership.
- Likelihood of person, family farms/individual person company, and other company ownership appear to remain consistent across both categories.

Differences in Ownership: Mitchell, GA



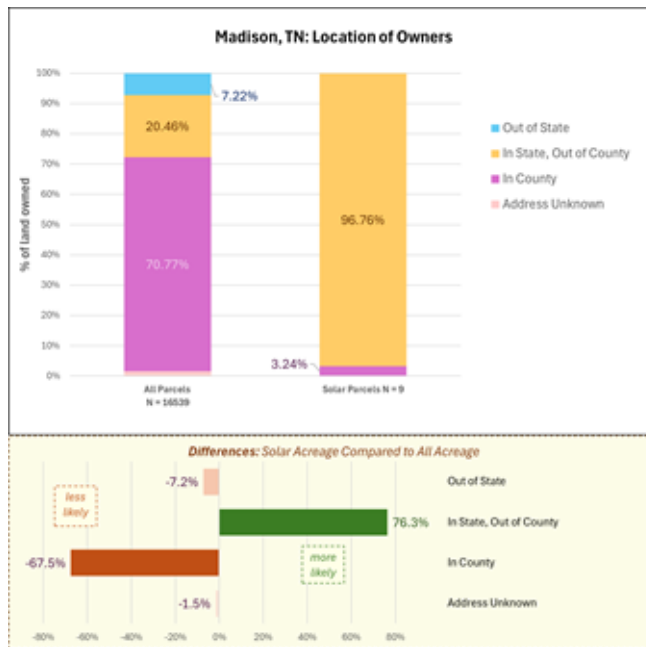
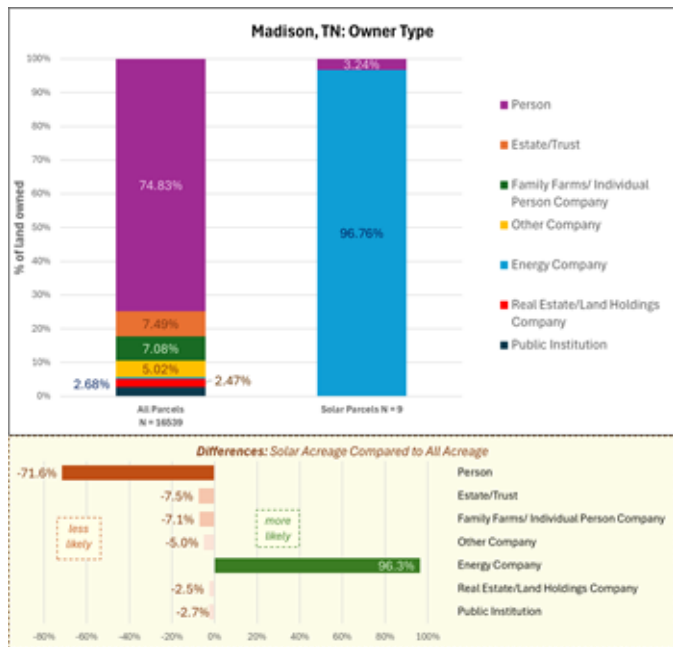
Key Takeaway:

In Mitchell, solar parcels have been corporatized, shifting to out-of-state ownership of energy and real estate holding companies.

Solar development in Mitchell, GA reflects a significant loss in local ownership of land.

- Person ownership is reduced by 51.8% for solar land as compared to rural land in general, while ownership by real-estate companies and energy companies is increased, reflecting exacerbated corporatization of rural land.
- Out-of-state ownership of solar land increases by 33.4% compared to rural land in general.

Differences in Ownership: Madison, TN



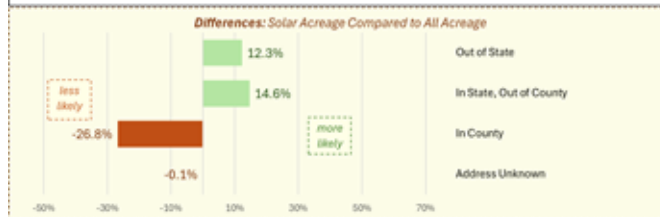
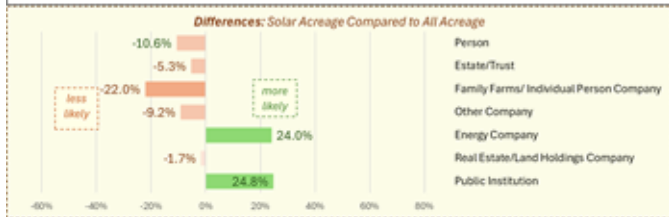
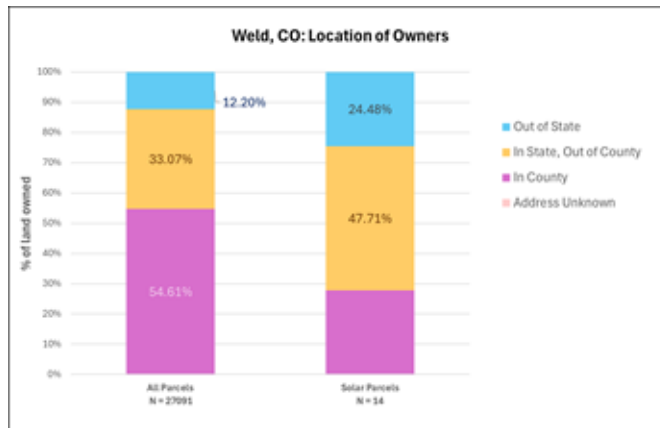
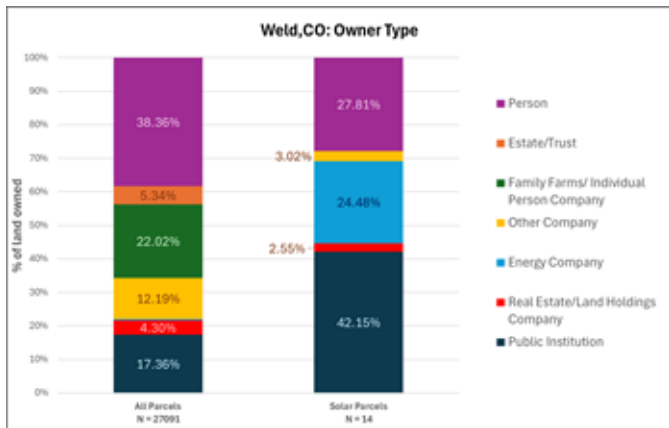
Key Takeaway:

In Madison, local community-associated entities have nearly no presence on solar parcels; therefore, instead, almost all parcels are owned by in-state but out-of-county energy companies.

Solar development in Madison reflects significantly reduced local ownership.

- Solar parcel ownership in Madison is almost entirely held by a single energy company. While this company has a national presence, it is headquartered in TN, hence the benefits from the land (in the form of retained ownership) are corporatized and flow out of the local community but remain in-state.
- This is a stark shift from the trends of high in-county and person ownership of rural land overall in Madison, TN.

Differences in Ownership: Weld, CO



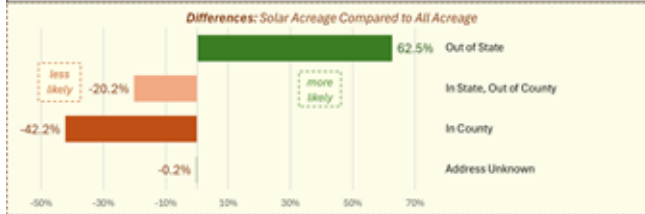
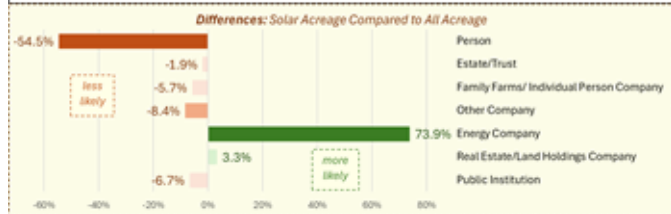
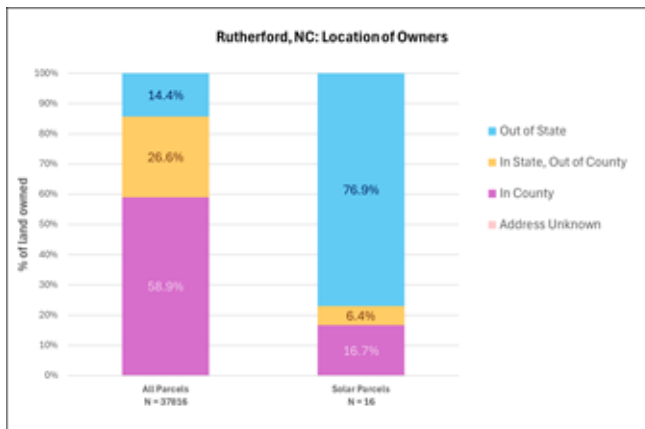
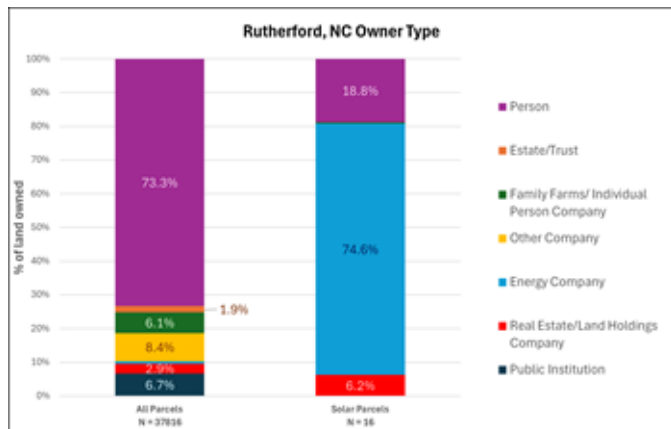
Key Takeaway:

In Weld, existing trends in out-of-state/county ownership and financialization of land are exacerbated under solar development but not as significantly as other counties in the sample.

Solar development in Weld trends towards loss in local ownership.

- Existing out-of-state and out-of-county ownership of rural land is increased under solar development.
- Energy companies own about ~24.5% of solar land; ownership by persons and individual person/family companies is reduced relative to rural parcels in general.
- There is an increase in public institution ownership, but this reflects land owned as a financial instrument by a federal government-sponsored enterprise, and not community-based/local government entities.

Differences in Ownership: Rutherford, NC



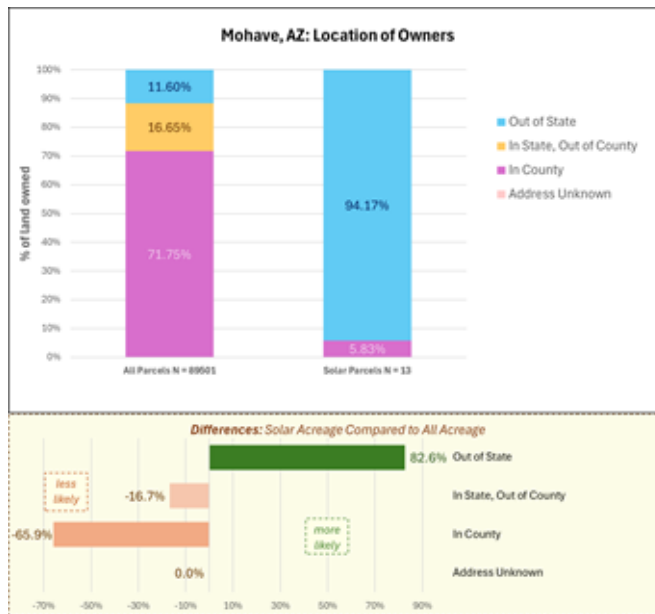
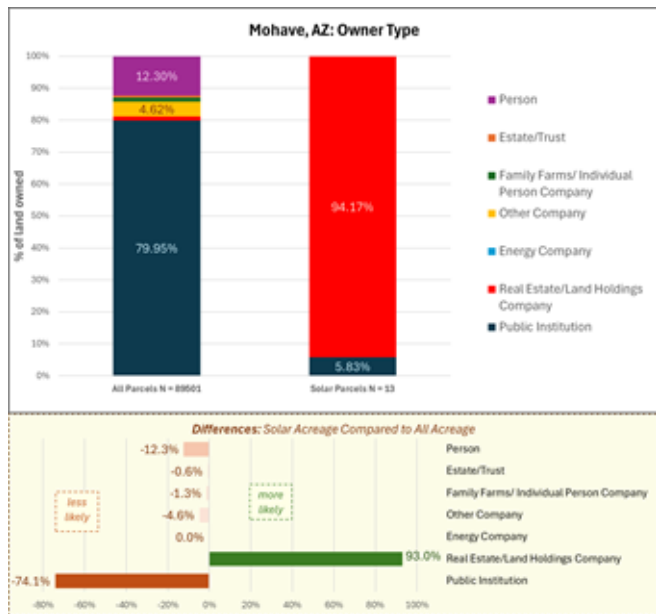
Key Takeaway:

In Rutherford, solar development reflects a large shift in land ownership trends, with significantly more out-of-state energy ownership for solar parcels.

Solar development in Rutherford reflects a significant loss in local ownership.

- While 73.3% of rural land in the county is owned by individual persons, energy companies own 74.6% of the solar land, which, in turn, increases out-of-state ownership by 62.5%.
- In-county ownership is reduced from 59% overall to only 16% for solar parcels.
- This county is featured in the Interview section of this slide deck, providing further context.*

Differences in Ownership: Mohave, AZ



Key Takeaway:

In Mohave, while solar development in Mohave is evidently significantly shifting ownership patterns from public institutions to corporate entities, it is unclear whether local communities are facing a similarly significant shift in benefits.

Solar development in Mohave reflects a significant shift in ownership patterns.

- While the vast majority of rural land in Mohave is owned by the federal government and, to a smaller percentage, by the state government, solar land is 94.2% owned by an out-of-state real estate holding company working on behalf of an energy company.
- While many of the federal and state agencies have in-county addresses, it is unclear that the benefits from their ownership of rural land in Mohave are flowing to local communities.
- Therefore, it is likely there is a relatively small shift in benefits from this large shift in ownership.

Takeaways:

Does solar follow the underlying rural land ownership patterns of its host community, or does it ameliorate or exacerbate out-of-county, non-person ownership?

- Solar typically exacerbates out-of-county, non-person ownership.
- This pattern is most often driven by out-of-county energy companies buying the land on which solar projects are built.
- However, energy company ownership is not the only explanation. In two cases, solar development was disproportionately located on land owned by out-of-county real estate and landholding companies, and in one case, on state-owned public land.

Is there variability in solar land ownership trends in different agricultural regions of the country?

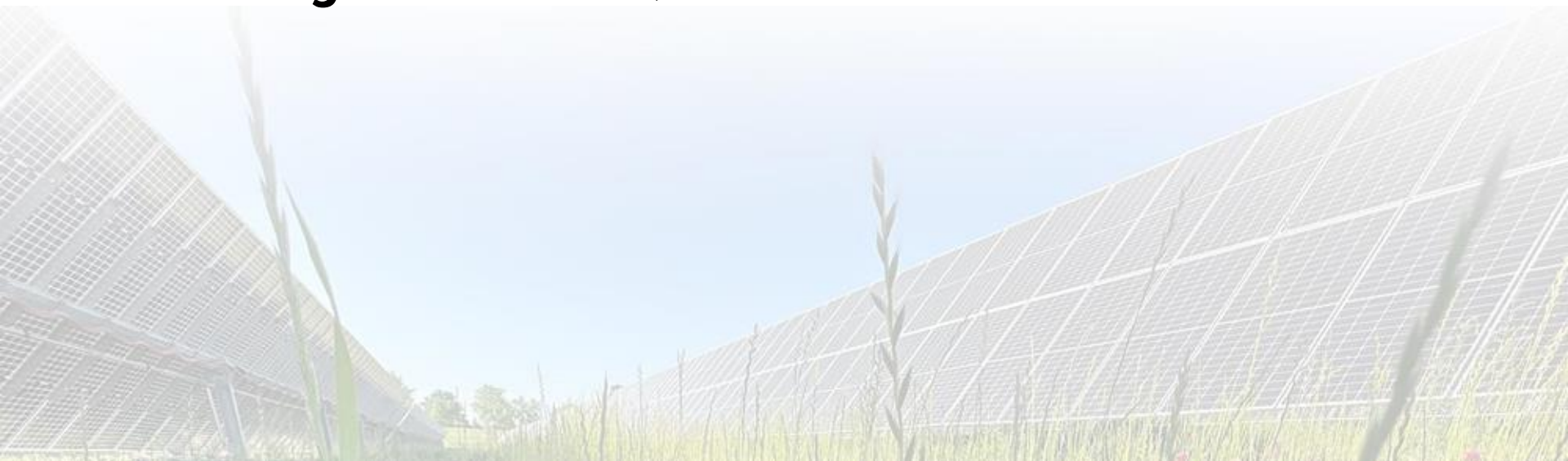
- Underlying (i.e., non-solar) land ownership patterns—and solar land ownership patterns—vary greatly from region to region. Because this analysis includes only one county in each region, it is difficult to determine whether observed differences reflect meaningful regional differences or county-specific characteristics.

How might ownership trends affect community outcomes?

- Lease revenue can be a significant source of local income. If solar landowners are out-of-county or out-of-state, the revenue and secondary benefits from those payments staying in the community could be reduced, unless offset by other solar company payments back into the community (e.g., payments in lieu of taxes). Alternatively, if local ownership of solar parcels is retained, so might the associated benefits.

Landowner Interviews

Objectives, Data & Methods



Interview Objectives & Approach:

Objectives:

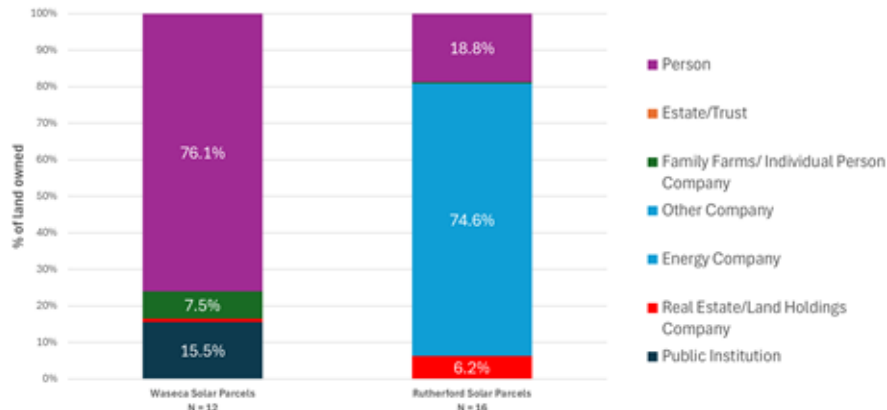
- Examine how utility-scale solar development is affecting farmland ownership, farm viability, and land access for small and mid-sized farmers. Specifically, we explored:
 - Solar as a strategy for diversifying farm income
 - Impacts of solar on intergenerational farmland transfer
 - Impacts of solar on land access for young, underserved, and/or immigrant farmers
- Determine whether solar land ownership trends impact small- and mid-sized farmer experiences.

Approach:

- Use diverse-case approach to select 2 counties from among the 8 studied in the parcel analysis.
- Semi-structured interviews with 12 farmers across the 2 solar counties.

Diverse Case Selection: Waseca, MN & Rutherford, NC

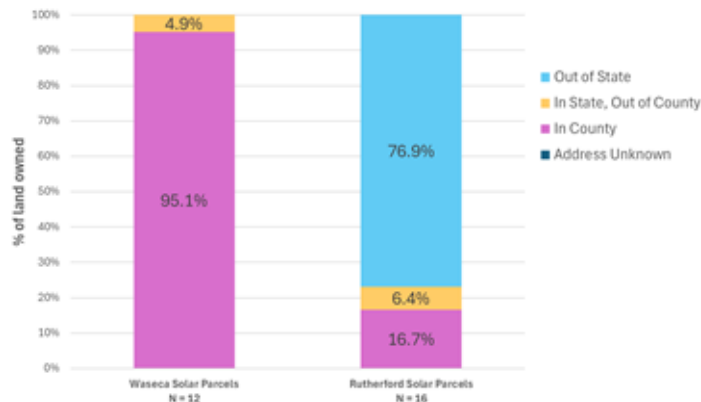
Solar Panels Owner Type: Waseca vs Rutherford



Waseca, MN: 83.6% of solar land is held by **persons, estates/trusts, or family farms/individual person companies.**

Rutherford, NC: 80.8% of solar land is owned by energy or **real estate/land holdings companies.**

Solar Panels Location of Owners: Waseca vs Rutherford



Waseca, MN: 95.1% of solar land owners are **in county**, up from 75.3% of owners of all parcels.

Rutherford, NC: 76.9% solar land owners are **out of state**, up from 14.4% of owners of all parcels.

Developing the Interview Protocol:

- Conducted a literature review on solar energy development, farmland access, and investor ownership of land.
- Developed interview protocols to account for tenant farmers and owner-operators, with and without solar on land.
- Key topics: solar's role in income diversification, farm succession planning, and land access for young, underserved, and/or immigrant farmers.
- Interview protocols reviewed and approved by U-M and LBNL Internal Review Boards (IRB).

Version 1. Tenant farmers: Lease some or all of the land they farm

- Can you tell me a little about the land you farm?
 - How long have you farmed this land?
 - How many acres are you currently farming?
 - What type of farming are you doing (e.g., crops, livestock, mixed)?
 - Is it all one parcel or spread across multiple parcels?
- What was your experience like finding land to lease?
 - How did you first come across this land? (e.g., word of mouth, online listing, extension service, farm link program, personal connection, etc.)
 - What factors did you consider when deciding to lease this land? (e.g., cost, soil quality, proximity to market, infrastructure, lease terms)
 - Do you have a written lease? If so, how long is the lease term?
- Have you noticed any changes in farmland rental costs in your area over the past few years?
 - Is rent going up, staying the same, or becoming harder to negotiate?
 - Any sense of what's driving that?
- Have you ever sought support from local, county, or state governments to help you access or afford farmland (such as grants, low-interest loans, land matching services)?
 - [If yes]
 - What kind of support did you seek?
 - Was it helpful? Why or why not?
- Have you noticed any impact on farming in this area as a result of solar? When I say impact, I mean positive or negative.
 - [if not addressed in initial question]
 - Have you noticed any changes in the price of farmland or cash rent?
 - Have you noticed any changes in which land is farmed, or the types of farming activities?
 - Have you noticed any changes in farmer retirement plans?
- Have you heard about your landlord or other landowners in your area being approached by solar developers about leasing their land?
 - [If yes]
 - Has your landlord talked to you about it?
 - Do you know if they're considering leasing to a solar developer?
 - Has that affected how secure you feel in your lease or plans for the farm?
- What would help make farmland more accessible or secure for you as a tenant farmer?

Version 2. Landowners who farm near solar farms

- Can you tell me a little about the land you farm?

Methodology: Interviewee Identification & Recruitment Process

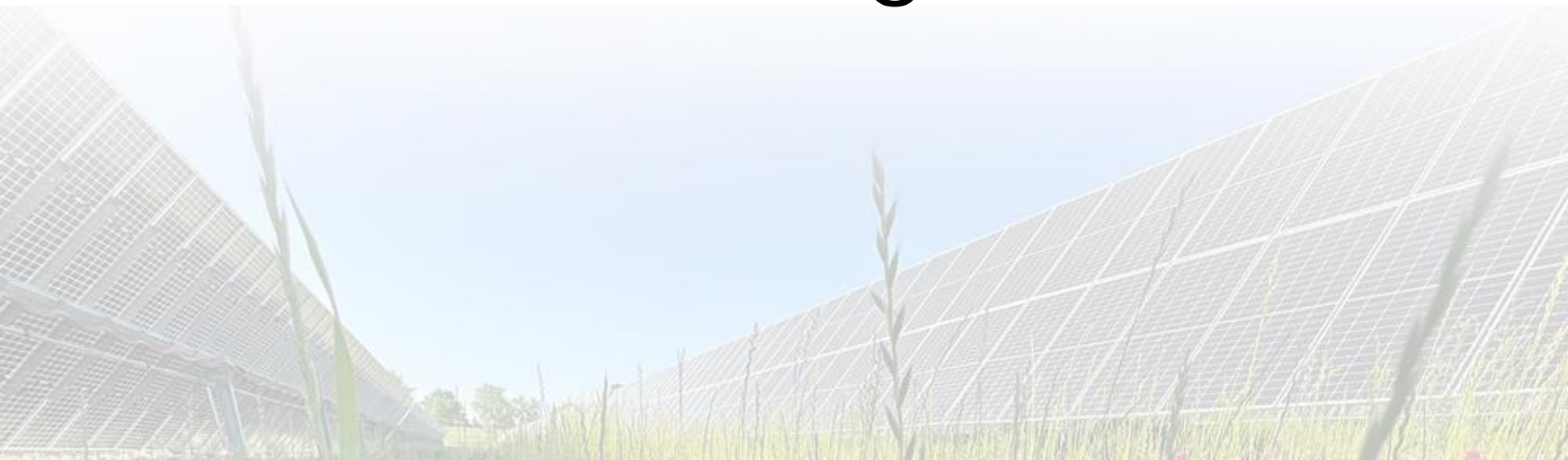
Potential interviewees were mailed letters to parcels near LSS. Developed list of addresses to use for recruitment by:

1. Identifying utility-scale solar host parcels (USPVDB/Lightbox)
2. Using GIS to locate parcels within 2 miles of solar sites
3. Matching nearby parcels to ownership records
4. Filtering & prioritizing parcels by distance to solar, agricultural land use, parcel size, & local vs. absentee ownership
5. Used snowball sampling to reach additional tenant farmers and landowners

Sent a total of 341 recruitment letters across 3 rounds. Interviews took place via telephone in Winter 2026. In total, 12 interviews were conducted.

	Tenant farmers near LSS who rent all or some of their land	Farmers near LSS who own all of their land	Farmers (former or current) near LSS who lease land to other farmers	Farmers (former or current) who lease land to solar developers	Total farmers interviewed
Waseca, MN	5	1	1	1	8
Rutherford, NC	0	2	1	1	4
					12

Landowner Interviews Findings



Findings: 1) Solar is One of Many Pressures

Farmers across sites see solar as one of many overlapping land use pressures.

What the other pressures are, though, vary.

- Rutherford is home to significant forestland and pasture, and interviewees describe significant pressure from real estate developers seeking to purchase land, along with some interest from solar developers in leasing land.
- Interviewees from Waseca, where row crop farming is a dominant land use, are frequently contacted by solar developers.

“

Farmers from Rutherford:

“I get contacted by real estate developers. I had contact too with a solar developer.”

“I had one neighbor tell me, I'm certainly glad to see that go in that solar farm, because I know you won't be selling it off to more houses being built.”

”

Farmers from Waseca:

“One of the reasons it makes it difficult [to afford farmland], especially if you have to borrow, if you don't have cash, is a competing demand on that land, right? Whether that be conservation, environmental, solar, renewable energy, people coming in and buying deer plots, whatever, right? So these are all factors.”

Findings: 2) Waseca Farmers are Concerned About High Quality Farmland Going to Solar

“

Farmers from Waseca:

In evaluating land use pressures, Waseca farmers place significant emphasis on protecting high quality farmland, comments not heard among Rutherford farmers.

A majority of Waseca farmers view solar as appropriate for marginal or hard-to-farm land, but not for high-quality agricultural land, which they fear is at risk of being consumed by large-scale solar projects.

“What I don't understand is we're taking high quality farmland out of production to put solar panels on, which does no good for the environment, in my opinion.”

“I would potentially have that conversation if it was on some of my more marginal ground, if I could be specific of where, where that actually landed or was put. My top ground, I'm not interested in doing....I don't disagree with solar, and I don't mind the objective. The concern I have is that if they were to take the best farmland — and to me, I think they need to be specific on what their choice of farmland is.”

“It is disturbing, seeing there are some properties that are being put into solar that, as a farmer, I don't like seeing high productive ground put in when I see other low productive ground that is being low cropped.”

Findings: 3) LSS Skepticism Even Among Those Who Own Their Own Small-Scale Solar Arrays

3 of the 8 interviewed Waseca farmers owned small-scale solar arrays. Even they expressed skepticism about utility-scale solar development.

None of the interviewed Rutherford farmers owned solar panels.

“

Farmers from Waseca:

Regarding utility-scale solar: “I personally, I don't like it, and necessarily don't agree with it.”

Regarding the availability of farmland: “I'm sure it's going to continue to be, you know, more and more issue, or, I shouldn't say, issue, but a concern. You know, whether, you know, whether it's the solar panels keep getting pushed on everyone.”

Regarding solar panel materials: “I don't like seeing silver being used to mount... It's a limited resource. It's very important resource, and it's being...40% of our silver is going into solar panels. I think that is creating a serious problem for the future, for electric development.”

Findings: 4) High In-County Ownership of Land With Solar Panels Was Noted in Waseca

Interviewee comments demonstrate some evidence of Waseca's high in-county ownership of land with solar parcels.

“

Farmers from Waseca:

“I only know of a few solar farms around here, and most of them are farmer owned, meaning they farm the land, and they rented it out to the solar company. The same parties that owned the land and were farming it rented it out....rather than a landlord renting it out to a solar company. Or an absentee owner...not connected to farming, renting it out. I'm sure there's some out there, but I don't know of any.”

“

Farmers from Waseca:

“If you own land on the grid where Xcel Energy is looking for a solar substation, it's like a winning lottery ticket to expand your farm, in my opinion. Because they're paying, you know, if going rate for land rent for farming is, say, \$300 an acre, if you are on the right grid, you can get like as a landowner, \$2,000 an acre per year for 20 years with a guaranteed renewal contract. Like you just, you just provided yourself an opportunity to turn 40 acres into 120 by taking the revenue and putting into something else if you wanted.”

Takeaways From the Interviews:

Waseca and Rutherford reflect two key possible outcomes for how solar development can impact rural land ownership trends:

- **Case 1:** In counties like Waseca (MN), solar land is much more likely to be owned by individuals or family businesses, and it is more likely that these owners are in-county residents, demonstrating that solar development ownership and benefits of rural solar land can remain local.
- **Case 2:** However, in counties like Rutherford (NC), solar land is likely to be owned by energy companies or land-holding companies, most of which are out-of-state, demonstrating financialization of rural land and likely erosion of local benefits.

Local ownership of solar parcels can help ensure that project benefits circulate in the local economy. Therefore, Case 1 may alleviate pressures of financialization and lost benefits for rural communities, avoiding the risks of Case 2, where benefits are likely to flow out of the community.

Mixed-Methods

Conclusions & Future Research Suggestions



Key Takeaways:

- Across all studied 223,181 rural parcels and 153 solar parcels, solar parcels are more likely to be out-of-state owned (+28.1 percentage points) and include substantial energy-company ownership (37.8% of solar land).
- 7 of the 8 studied counties followed this trend, with Waseca County being an outlier in solar disproportionately being on land owned by in-county taxpayers, a fact that was noted by interviewees.
- Whether solar mirrors or exacerbates non-person, out-of-county land ownership trends is highly context- and developer-specific – shaped by existing county land ownership patterns and the developer's business/land acquisition model.
 - Most cases of disproportionate non-person, out-of-county solar land ownership appear to be due to energy companies buying, rather than leasing, the land.
 - However, some cases appear to be due to solar being sited on public land or land owned by out-of-state real estate companies.

Key Takeaways Continued:

- Interviews suggest farmers generally see solar as one contributor to broader land-use pressures, not necessarily the primary driver shaping land access and land markets.
- With increased intentionality in land selection (i.e., choosing in-county landowners and leasing rather than buying the land), solar developers may demonstrate they are ameliorating a trend vexing many rural communities.
- Our n is small, so we present these as patterns/observations, not as a basis for definitive nationwide estimates or expected county-level outcomes.

Suggestions for Future Research:

- **Scale, sampling, and data:** expand to more counties with systematic sampling and a more robust owner-classification approach to:
 - Reduce misclassification risk inherent in keyword-based coding of semi-structured owner text.
 - Update and scale analysis leveraging recent solar buildout (USPVDB) and improved Lightbox address coverage.
 - Ideally, this could uncover additional county typologies (beyond the two observed).
- **Following where benefits go:** Expand analysis of who receives ongoing payments vs. one-time sale proceeds, decision points for land owners, whether taxation or neighbor-payments might play a role, whether these benefits stay local, etc.
- **Keep solar in context:** A larger examination of greater land use pressures is required to contextualize the role of solar deployment.
- **Extend land-access analysis:** Further explore implications for tenant farmers and farm transition/succession, building on interview themes about access and competition for land.

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