American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

Texas Smart Solar℠ Survey Report

SURVEY FINDINGS & RECOMMENDATIONS

American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

American Farmland Trust (AFT) is the largest national organization dedicated to protecting farmland, promoting sound farming practices, and keeping farmers on the land. AFT unites farmers and environmentalists in developing practical solutions that protect farmland and the environment. We work from "kitchen tables to Congress," tailoring solutions that are effective for farmers and communities and can be magnified to have greater impact. Since our founding, AFT has helped to protect more than seven million acres of farmland and led the way for the adoption of conservation practices on millions more. AFT has a national office in Washington, D.C., and a network of offices across America where farmland is under threat.

For more information, visit us at farmland.org

Authors

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Garrett joined American Farmland Trust in 2023. He is responsible for leading efforts to protect agricultural land while advancing solar energy development in Texas using Smart Solar principles and strategies. Garrett serves as a regional voice and technical resource for farmers, ranchers, service providers, and landowners. Born and raised in Texas, Garrett resides in San Antonio with his wife and two children. He received his Bachelor's degree in Sociology from Texas A&M University and his Master's in Geography from the University of Texas at San Antonio. Garrett worked in the solar and energy storage field for five years before joining AFT. Prior to this, he spent time in the U.S. and abroad teaching and volunteering, experiences that deepened his commitment to sustainability, renewable energy, and education. Outside of work, Garrett has been a beekeeper for more than a decade and enjoys spending time in his yard. He has a love for native plants, birdwatching, gardening, and growing fruit trees.

Sarah Fulton-Smith, Texas Regional Director, sfultonsmith@farmland.org

Sarah joined AFT in March of 2023 and leads AFT's program in Texas. As a seventh generation Texan, she cares deeply about leading programs that improve the resilience of Texas' working lands and the farmers and ranchers that steward them. Sarah is a soil ecologist and has worked at the intersection of agriculture and climate change throughout her career as a policy advocate, a researcher, and a farm owner/ operator. She worked in Washington, DC as a Senior Associate for Climate and Energy at the United Nations Foundation, and as a consultant for the United Nations Food and Agriculture Organization focused on advancing sustainable land use and bioenergy policy efforts through stakeholder engagement and consensus building. For several years, she operated her own farm and horse training business in Maryland where she collaborated with local partners to permanently protect her farm and implement several conservation agreements. Sarah holds a BS in Bioenvironmental Sciences from Texas A&M University, an MPA in Environmental Science and Policy from Columbia University, and a PhD is Soil Science from Colorado State University. Her research interests are soil organic matter formation and the provision of ecosystem services and carbon sequestration in agroecosystems.

Erin Upton, PhD, Social Science Senior Technical Specialist/Analyst, eupton@farmland.org

Erin is a social scientist partnering with AFT's national staff to advance collaborative research with farmers/ranchers, landowners, rural communities, and other partners to understand the social drivers of agricultural resilience better. Erin has a doctorate in Earth, Environment, and Society from Portland State University. Her research focused on understanding the human dimensions of complex environmental challenges, including how water governance and climate change impact decision-making for farmers in agricultural regions. She has extensive experience conducting research in agricultural regions in North America, South Africa, and Australia. Erin has a bachelor's degree in international studies and French from the University of Oregon and a master's degree in landscape architecture from the University of British Columbia. Before joining AFT, Erin worked as a research and evaluation consultant for government agencies and nonprofit organizations, as a landscape architect, and in the wine industry in rural Oregon.

Executive Summary

As part of American Farmland Trust's (AFT) Smart Solar Initiative in Texas, a statewide survey was conducted in Fall 2024 to gather insights from nearly 200 farmers, ranchers, and landowners about solar development on agricultural land. The survey, offered in both English and Spanish, was complemented by follow-up interviews in Spring 2025 with a diverse group of respondents. The goal was to gain a deeper understanding of stakeholder perspectives and inform AFT's future work by identifying key concerns, opportunities, and information gaps related to solar energy and farmland preservation.

Survey participants expressed a range of views on solar development, with support nearly evenly split: 49% in favor, 41% opposed, and 9% conditionally supportive, often contingent on maintaining agricultural productivity and siting solar on marginal land. Respondents highlighted concerns about impacts on farm viability, tenant farmer access, and long-term land preservation, while also recognizing agrivoltaics (dual-use solar and agriculture) as a promising strategy to keep land in production. However, many landowners lack access to trusted resources and clear information about solar leasing, including its financial implications, legal considerations, and long-term impacts on soil health.

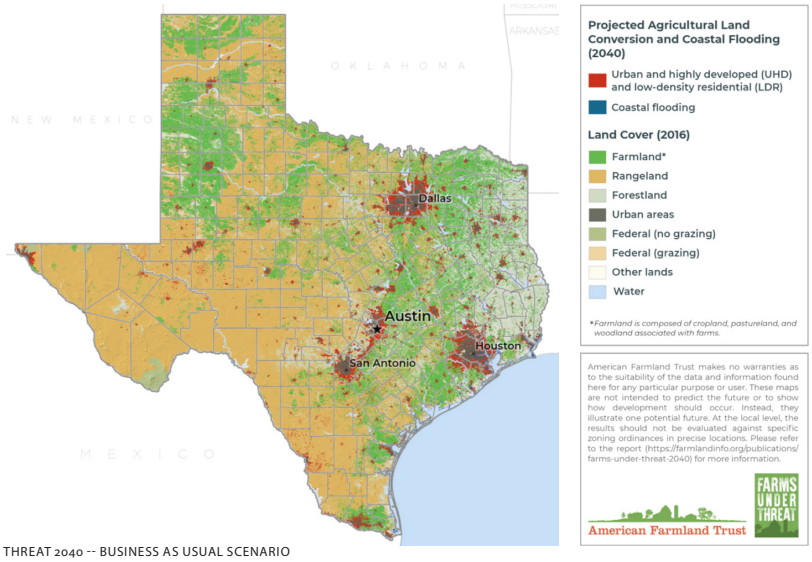
The findings underscore the need for targeted education and support. Farmers and landowners are interested in learning more about agrivoltaics and solar leasing, but traditional farming organizations and government agencies are not seen as trusted sources of information on this topic. AFT recommends prioritizing solar siting on low-conflict lands, supporting tenant farmers through agrivoltaic models, incentivizing agricultural integration in solar project design, and improving access to legal and financial guidance for landowners. Training agricultural professionals to advise on solar integration is also essential to ensure informed decision-making and sustainable outcomes.

Texas stands at a critical intersection of agricultural heritage and renewable energy expansion. The survey reveals that while producers are not inherently opposed to solar, they want development to be done thoughtfully, with safeguards for farmland and rural communities. By addressing the information gap and promoting collaborative, well-sited solar projects, Texas can lead the way in demonstrating how renewable energy and agriculture can coexist and thrive together.

Introduction

Texas has long been known for two leading industries, agriculture and energy. Not only does Texas have more farms and ranches than any other state, 230,662 covering over 125 million acres, but it also continues to be a leader in renewable energy generation. While wind energy has been powering Texas for over 25 years, solar energy generation — particularly utility-scale solar— is rapidly expanding across the state, bringing both opportunities and challenges. Over the last four years, solar power generation in Texas has more than tripled, and since 2024, the state has led the nation with the most installed utility-scale solar.

This rapid energy expansion coincides with substantial population and economic growth, further increasing the demand for land, water, and energy. AFT's Farms Under Threat (FUT) 2040 report found that Texas is poised to lose more agricultural land than any other state to residential and commercial real estate development— over two million acres by 2040— if past development trends continue. Eight of the twelve most threatened counties for agricultural land loss in the nation are in Texas, underscoring the urgency of smart growth and farmland protection. In the same FUT analysis, modeling projected that under current policies, 83% of new solar development by 2040 is expected to be sited on agricultural lands, with nearly half taking place on our most productive farmland.



FARMS UNDER THREAT 2040 -- BUSINESS AS USUAL SCENARIO

Recognizing both the challenges and opportunities with all scales of solar development, AFT launched its Smart Solar Initiative to ensure that solar development is done in a way that maximizes benefits to farmers and ranchers, agricultural lands, and rural communities. To guide this buildout, AFT's Smart Solar Initiative developed four Smart Solar Principles (see right).

Due to regional differences, Smart Solar will vary in practice across the country, but the principles remain the same. Our goal with this survey is to better understand the perspectives of Texas farmers, ranchers, and landowners so that we can develop educational materials and resources to better serve their needs.

SMART SOLAR PRINCIPLES

PRINCIPLE 1

Prioritize solar siting on buildings and land not well suited for farming (unless agrovoltaics).

PRINCIPLE 2

Safeguard soils and the ability for land to be used for agriculture.

PRINCIPLE 3

Grow agrivoltaics for agricultural production and solar energy.

PRINCIPLE 4

Promote equity and farm viability.

Survey Results and Discussion

Demographics and Farm Characteristics

Respondents were from 89 Texas counties (Figure 1) and represent a diversity of agricultural operations. Most are either landowners (36%) or farm/ranch owner-operators (36%), while the spouse of the farm/ranch owner-operator, tenant farmer, and ranch manager each comprised 5% or less (Figure 2).

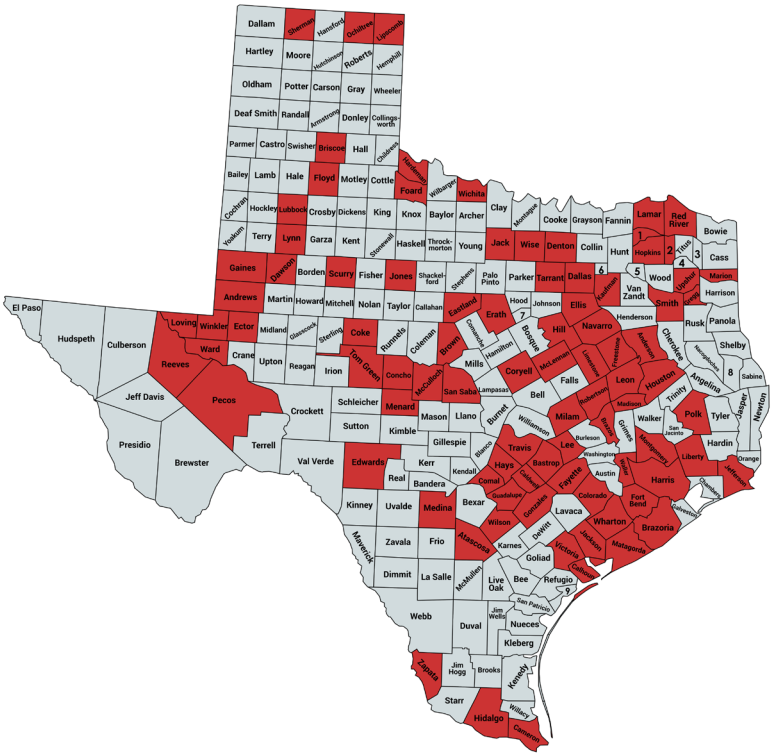


FIGURE 1: MAP OF COUNTIES WITH MORE THAN ONE RESPONDENT IN RED

While most respondents identified as a farmer or rancher, other roles included non-farming landowners (14%), farm employees (11%), agricultural educators (9%), land trust staff (4%), government agency personnel (2%), and policymakers (2%) (Figure 3).

Survey respondents' operations vary in size, with most responses having 101-500 acres (22%) or 1,001-10,000 acres (22%). According to the Texas Department of Agriculture (TDA), the average farm size in Texas in 2022 was 544 acres; however, in our survey, 69% of operations were under the 500-acre threshold. The majority of respondents were both under 65 years old (73%) and had more than 10 years of farming experience (64%).

Primary production on the farm and ranch aligned closely with major commodities produced in Texas, as reported by TDA in 2022. Beef (55%) and hay (31%) production led primary production of our survey respondents, followed by corn (17%), vegetables (16%), wheat (15%), sheep/goats (15%), and cotton (12%) (Figure 4).

Figure 2: Choose the option that best describes your role in the farm or ranch operation in Texas:

193 Responses

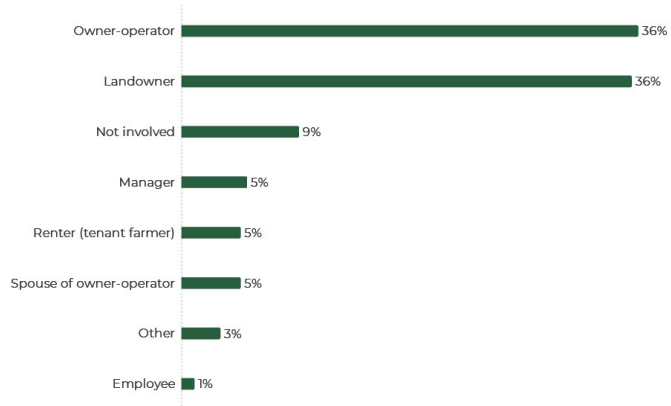


Figure 3: Which of the following roles best describes you?

170 Responses

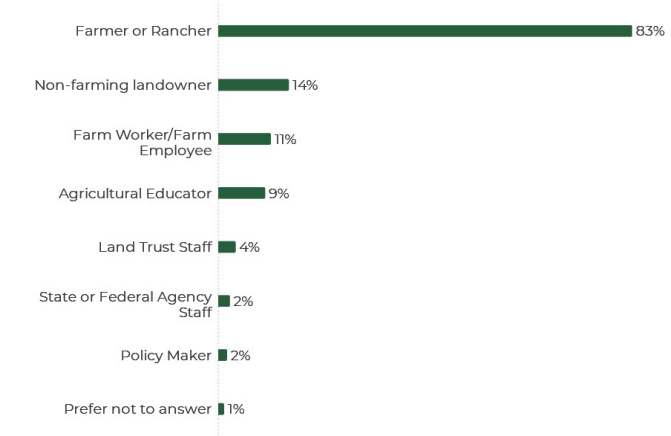
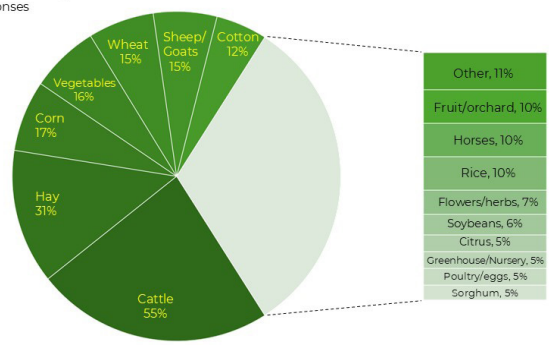
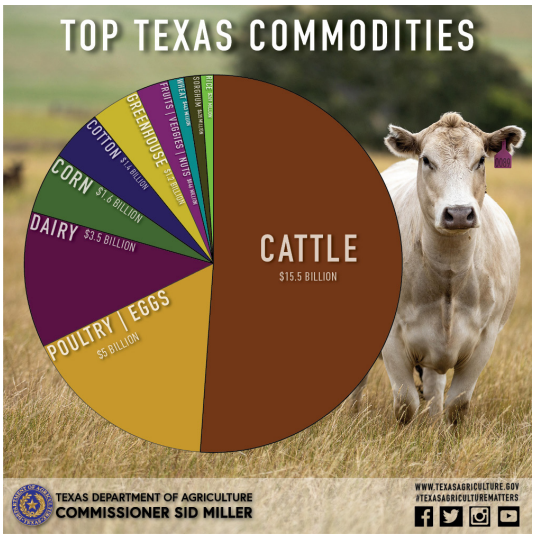


Figure 4: Which of the following do you primarily grow or raise on your farm or ranch?
176 Responses





General Impressions:

Finding 1: Support for solar development on agricultural land is mixed and often conditional, with a preference for siting projects on marginal or less productive land rather than USDA Prime or forested land.

Survey results show a nearly even split on support for solar projects on Texas agricultural land, with 49% in favor, 41% opposed, and 9% expressing conditional support. Conditions often include maintaining agricultural production, protecting wildlife habitat, and limiting development to marginal or least productive land.

"At my core, I don't like them (solar projects). I don't think they're the green solution they claim to be. But if they're going to be here, (the land) should at least stay in ag production."

– Interview 4

"Better to incentivize solar on marginally productive land than try to restrict on all."

– Interview 7

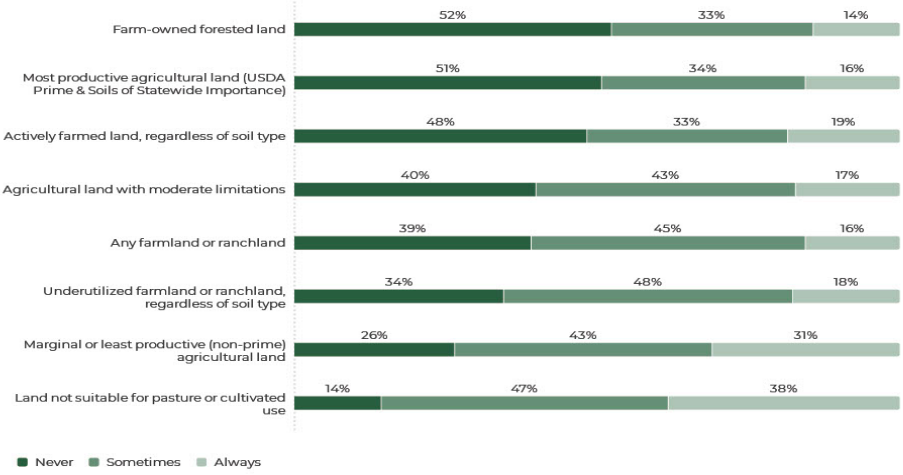
"Disappointed at all the misinformation out there and that it has become political. I'm 100 percent pro agriculture and believe solar and ag can work together."

– Survey respondent

This mixed and conditional sentiment was reflected in the interviews. Several respondents shared that they were not the biggest supporters of large-scale solar installations but saw both economic and land access opportunities. Many emphasized the importance of maintaining flexibility on the land (for example, long-term solar leases versus permanent housing development) so that options are not limited for future generations. Some interviewees were frustrated by the politicization of renewable energy projects. They thought that solar development and agriculture can coexist, but also should be guided away from the most productive farmland and instead encouraged on more marginal agricultural lands.

Figure 5: Solar development for off-farm consumption should be allowed on:

176 Responses

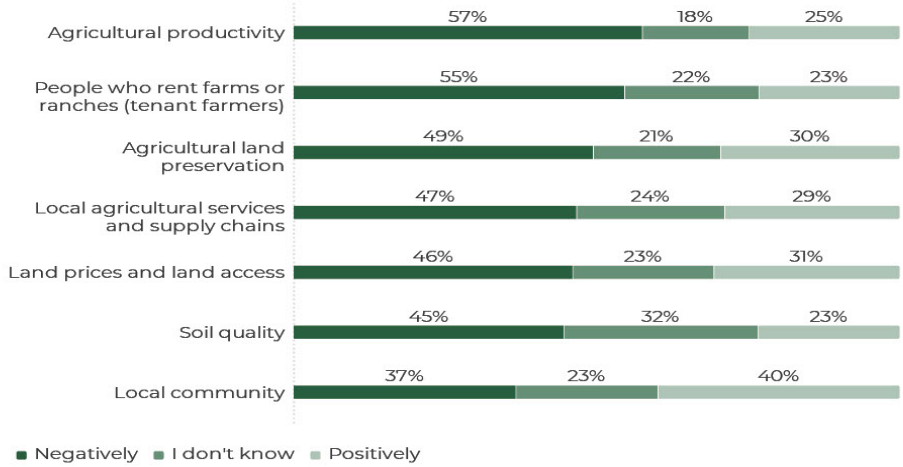


Finding 2: The biggest concerns regarding solar development are the possible impacts on agricultural productivity, tenant farmers, and agricultural land preservation.

Survey respondents expressed a range of concerns regarding solar development's impact on agriculture. Primarily among them are possible negative effects on agricultural productivity (57%), access to land for tenant farmers (55%), and the long-term preservation of agricultural land (49%) (Figure 6).

Figure 6: How will solar development in Texas impact the following?

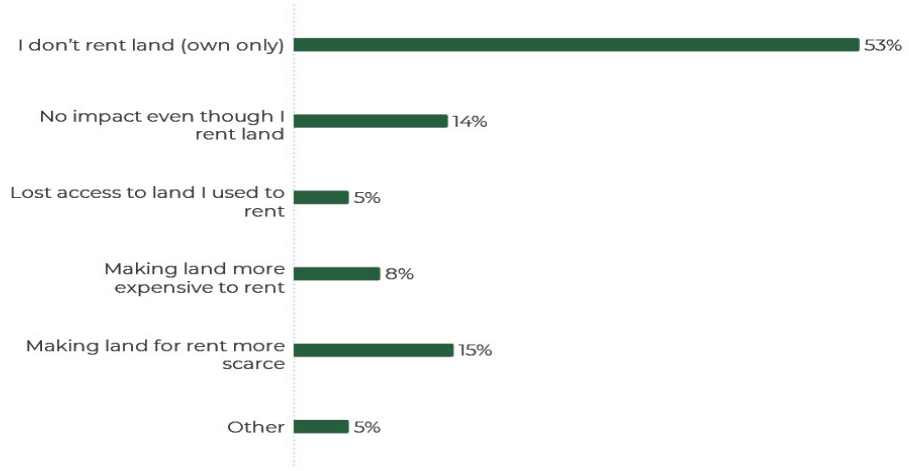
176 Responses



Survey data indicated that nearly half of respondents (47%) rent some amount of farmland, and among those, some reported that solar development had reduced land availability (15%), increased rental costs (8%), or caused them to lose access altogether (5%) (Figure 7). Respondents who do not rent land—or who do but haven't been affected—were more likely to support solar development on farm or ranchland than those who have experienced negative impacts.

Figure 7: How has solar development in Texas impacted your ability to rent land?

175 Responses



The interviews showed that solar can restrict access to land in some cases, yet can offer entry points for others. Solar grazing—managing vegetation with livestock on solar sites— may provide new opportunities for land access for those shut out of traditional pathways. One respondent who leases land for a cow/calf operation sees development, land fragmentation, and generational transfer of land in their area as being more of a challenge to finding and holding onto a lease than solar development. Others also noted that while urban development and land fragmentation pose a bigger threat to farmland in their areas than solar, local public opinion remained skeptical—particularly in counties where solar would be the first large-scale energy project. One participant shared that, with all the development and new subdivisions in their area, there wasn't a requirement to put solar panels on each of those roofs, which are already impervious cover. Though the specific challenges vary by region, development pressures and land fragmentation can reduce the availability and continuity of agricultural leases, and any reduction in operation size can limit the amount of revenue that displaced tenant farmers rely on to pay their bills. This dual reality—where solar opens doors for some but tightens access for others—underscores the importance of thoughtful siting and intentional design.

"Land around here is always for sale...that's when we may get the opportunity to lease a property when it does transfer generations, and they hang on to it for a few years and realize they're never moving back and sell it."

- Interview 4

"We're pushing land stewardship through solar."

- Interview 2

I view solar grazing as the single biggest opportunity for new farmers, ranchers, and military veterans to get into agriculture... We've got ideas on how to put eight or nine enterprises on one solar site--bees, broilers, sheep, hay...So many people could make a living off one property."

- Interview 1

Others echoed these concerns and added context—particularly around erosion and land preservation. Several landowners were critical of the poor site preparation and lack of conservation practices during solar construction. A number of interviewees emphasized that with better planning and local input, solar could be a powerful land preservation tool, with some sharing stories of using solar leases to block other types of eminent-domain development projects that were threatening their land.

Analysis: Support for solar development on Texas agricultural land is mixed and often conditional, with many respondents emphasizing the importance of prioritizing marginal or less productive land. Concerns focus on the loss of agricultural productivity, reduced land access for tenant farmers, and the long-term preservation of working lands. While some landowners view solar leases as a way to push back against other development pressures and keep land in their family, others, such as tenant farmers, see them as increasing rents and reducing the amount of land available to farm. Without safeguards or prioritizing agrivoltaics, solar projects could unintentionally displace farmers and ranchers, impacting local economies. These findings underscore the need for thoughtful solar project siting and intentional design that minimizes disruption to agriculture.

Recommendations: To reduce conflict and better align solar development with farmland protection, Texas should explore data-informed approaches that help steer projects toward less productive land. Tools like The Nature Conservancy's Site Renewables Right and AFT's Farms Under Threat 2040 can help guide siting decisions when paired with additional stakeholder input. Washington State's least-conflict siting tool provides an example of this collaborative approach that could be adapted to a Texas context. At the same time, promoting agrivoltaics and supporting tenant farmers can help keep land in production and limit disruptions to rural farm economies.

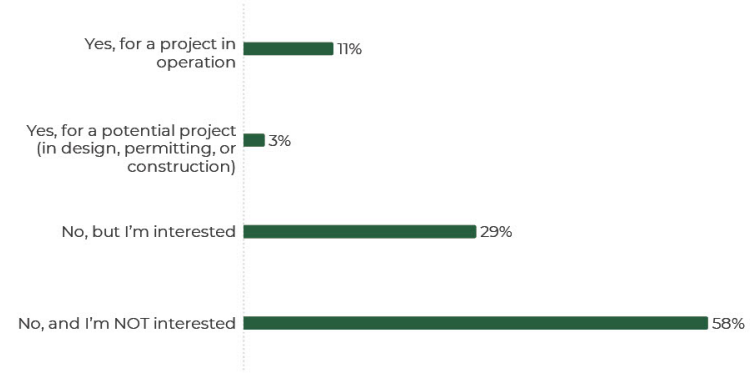
Solar Leasing

Finding 3: While a majority oppose leasing their land for solar development, others see it as a means for supplemental income and a way to continue their operation.

Of the 153 responses, 58% do not want to lease farm or ranchland to a solar developer, while 29% are interested (Figure 8). Some already have solar leases for projects in operation (11%), and 3% have potential projects in the design, permitting, or construction process.

Figure 8: Do you currently lease farm or ranchland to a solar developer to generate electricity for off-farm consumption?

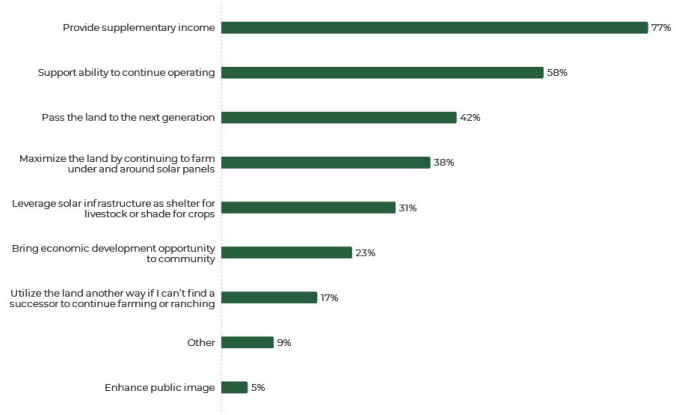
153 Responses



Supplementary income (77%) is the primary motivator for those who have or are interested in a solar lease, followed by supporting their ability to continue operating (58%) (Figure 9). When asked about services or information to help make decisions about leasing land to host solar on their land in the future, most were interested in information on financial costs and benefits (73%), agrivoltaics (dual-use) options (68%), legal advice on lease agreements and landowner options (64%), decommissioning and site restoration after project life (61%), and impacts to farmland soils over time (58%).

Figure 9: What is your motivation for leasing land to a solar developer?

64 Responses



Interviews revealed that for many landowners, solar leases provide a crucial financial buffer that supports long-term viability and generational transition. With a new, consistent, and predictable source of income, many were proud that this has allowed them to invest back in their operation and provided opportunities for their kids to return to the farm. Some landowners further benefited by securing the vegetation management contract, creating an additional income stream and allowing them to continue stewarding their land.

"There is an opportunity here to create cash flows and certainty with solar. So, we just looked at it as a great diversification for the whole family operation."

– Interview 3

At the same time, many respondents stressed the complexity of navigating lease agreements, pointing out the need for skilled legal counsel and a clear understanding of long-term implications. Several noted that solar companies often change hands throughout the project's life, so it is critical to get your priorities in writing, which is easier said than done. With the slow pace and difficult negotiation process, a couple of respondents stressed the importance of not always going with the highest bid, but with one that addresses your concerns and can get the deal done. One interviewee wished there were some sort of mediation process in place in order to work through agreements in a more expedited and efficient way.

"This was a way to stay in the farming and ag sector and try to make a difference in what we do...Our boys are involved in agriculture, and we wanted them to have an operation to come back to, and you know a farm to have...So, this helped us fufill our dream."

– Interview 2

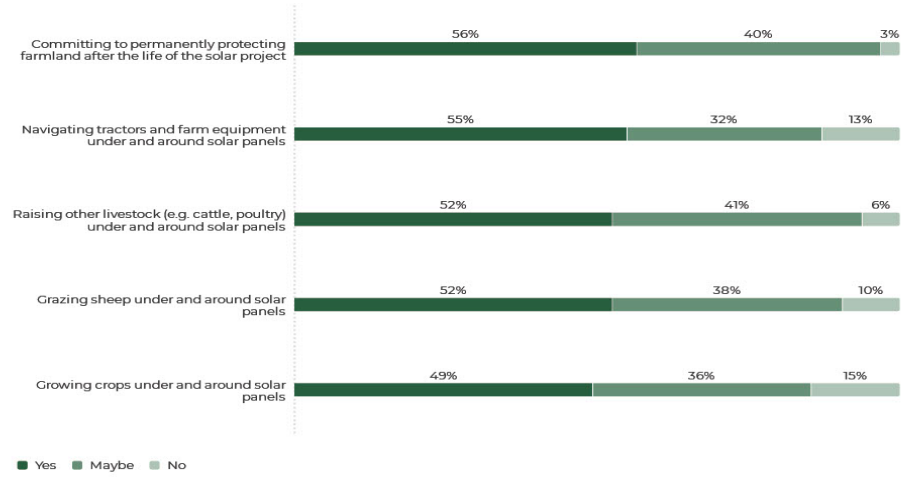
Agrivoltaics (Dual-use)

Finding 4: Widespread support for agrivoltaics projects, such as livestock grazing or crop production, under and/or between rows.

There was strong interest in incorporating agrivoltaics (dual-use) among respondents who were interested in a solar lease, currently have a project, or are in the development process. A majority expressed willingness to engage in various activities to keep farming or ranching on solar project sites (Figure 10). These responses underscore a clear opportunity that many producers are interested in continuing agricultural use alongside solar development.

Figure 10: Willingness to engage in these activities to keep farming or ranching on solar project site

64 Responses



Interviews strongly reinforce this finding. Enthusiasm about agrivoltaics—specifically solar grazing—as a path for economic opportunity and sustainable land use was clear. Producers emphasized the unique compatibility between sheep grazing and solar infrastructure. In fact, several landowners and graziers viewed agrivoltaics not just as compatible, but transformative. Multiple solar graziers described how contracts to manage vegetation on solar projects have enabled them to expand their flocks, build new businesses, and all while improving soil quality on these sites. Even though some respondents are not fans of utility-scale solar installations, they see a once-in-a-generation opportunity to use their skills and livestock to provide vegetation management services. They felt that since utility-scale solar is already happening, they might as well be multi-use instead of taking agricultural land out of production.

While the enthusiasm is real, so are some of the challenges that respondents raised. Some mentioned that, unless you have the leverage of being the landowner, getting your first solar grazing contract can be a challenge. Many also cited difficulties accessing and understanding the request for proposal (RFP) and contracting processes. New solar graziers, particularly when getting on their first site, are typically offered only one-year contracts, which creates challenges in securing longer-term financing.

Several highlighted how solar developers often overlook opportunities to prepare sites for long-term dual use—failing to plant appropriate vegetation, ignoring local erosion concerns, or not including design considerations that could more easily facilitate agricultural production on site. With limited early involvement in project designs, especially when it comes to fencing, water, and forage considerations, some expressed frustration that, in most cases, agricultural production was an afterthought. One respondent thought the biggest barrier is convincing the asset owners or operators that running sheep on these sites is a good thing.

> **"It (solar) created a tremendous opportunity for us that really is not there otherwise, right? Because with land costs, you can't go buy land and make the payments with sheep. That just doesn't work. Leasing opportunities are pretty few and far between. So, for...the continuation of the sheep industry, this is the biggest opportunity that's out there... and so solar has made something that was practically impossible before to be possible now."**
>
> **- Interview 6**

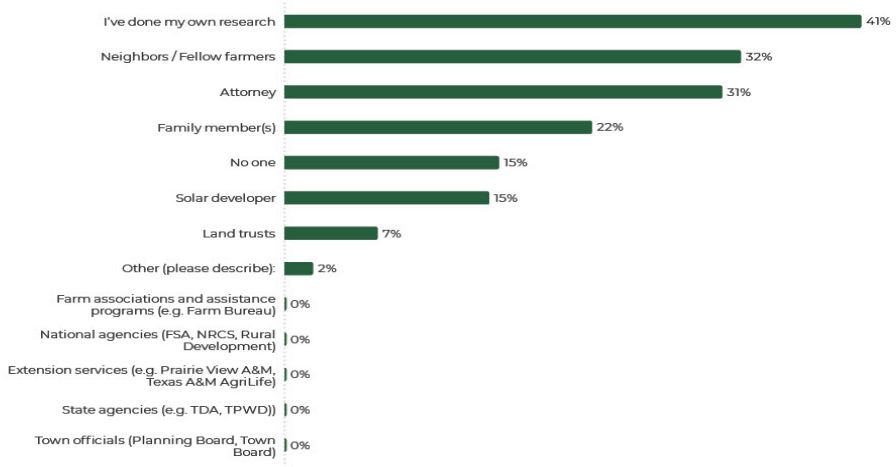
Information needs and trusted sources

Finding 5: While there is considerable interest in services and information to help make decisions about leasing land to solar developers, traditional farming organizations and government agencies are not seen as trusted sources of information on this issue.

It was interesting to see who respondents trusted for information on these issues. Beyond those who relied on their own research (41%), neighbors and fellow farmers (32%), as well as attorneys (31%) were the most trusted sources (Figure 11). Organizations commonly associated with agriculture and land management– including government agencies, extension services, and farm associations– were not widely trusted for issues relating to solar. This contrasts with surveys we conducted in Virginia and Colorado, where extension services and farm organizations ranked among the most trusted sources of information.

Figure 11: Who do you trust the most for information about these issues?

151 Responses



The interviews added some nuance but still showed that there is a lack of trust in traditional agricultural organizations for solar-related information. While most respondents still value these same organizations for non-solar-related information and resources, many view them as resistant to change. Instead, they rely on online platforms such as LinkedIn and Facebook, and personal networks of fellow solar graziers, landowners, and even developers. Many mentioned the American Solar Grazing Association (ASGA), formed specifically to promote and support solar grazing, as a key resource for information and networking.

Analysis: There is a strong interest in agrivoltaics, particularly solar grazing. Many Texas producers see solar grazing as not only compatible but transformative, offering new business models and supporting land access and stewardship. This strong interest in agrivoltaics represents an important opportunity to align solar development with Texas agriculture. Intentionally designed agrivoltaics systems can generate additional revenue streams, keep land in agriculture, and support rural economies.

However, challenges persist. For landowners, solar leases can provide critical income to support generational transition and reinvestment, but navigating them can be difficult, especially when priorities aren't clearly addressed in contracts and when projects change ownership. Solar projects are already complex, and including agricultural operations adds additional considerations. While some solar companies recognize the economic, environmental, and social value of solar grazing, they are still the exception. Most solar projects overlook the infrastructure needed to support solar grazing, much less plan for the integration of different types of crops, livestock, and production systems.

Traditional agricultural organizations and government agencies, which farmers typically rely on for advice, are also not trusted sources of solar-related information. This could be tied to the politicization of renewables or the speed at which utility-scale solar has expanded, leaving many agriculture support organizations hesitant or ill-equipped to engage on the issue.

Recommendations: AFT recommends supporting the growing interest in agrivoltaics by encouraging solar developers to design projects from the beginning with agriculture in mind. Agrivoltaics creates opportunities to keep land in agriculture, but would benefit from additional research, investment, and incentives to reach its promise. Policymakers should look at programs to incentivize or support the adoption of agrivoltaics using clear statutory definitions and supportive program frameworks, such as those outlined in AFT's recent Policy Recommendations to Increase Agrivoltaic Development. Landowners need clear, accessible information on solar leasing, especially on the legal, financial, and land-use implications. Adapting AFT's Solar Leasing Guide for the Pacific Northwest for a Texas context could be a useful resource for landowners to think through goals and considerations regarding the development, construction, operations, and decommissioning phases of a solar project, including how to plan for various agrivoltaics options. Additionally, landowners need trusted, neutral entities to help with lease review, planning, and long-term considerations. Building the capacity of agricultural and conservation professionals through solar-specific trainings can help trusted agricultural institutions play a more active role in guiding producers through the opportunities and challenges of this new land use. With the right resources and information, these organizations could help disseminate information to agricultural producers and landowners, including best practices for integrating solar energy while protecting soils, keeping land in agriculture, and strengthening farming operations.

Conclusion

The growth of solar energy development across Texas presents agricultural producers and landowners with both generational opportunities and challenges. The mixed and conditional support for solar development on agricultural land reflects an underlying tension. While many recognize the economic opportunities, there is clear concern over preserving highly productive farmland, land access, and mitigating long-term impacts. Intentionally designing solar projects with agrivoltaics opportunities could alleviate some of these concerns. In fact, the vast majority of operators open to or already involved with a solar lease are interested in continuing agricultural production on-site. Likewise, other producers see solar grazing as a generational opportunity to gain access to land, build a thriving business, and revive the American sheep industry. Providing landowners with trusted guidance and best practices on solar leases, agrivoltaics options, and long-term considerations, as well as building the capacity of agricultural professionals to confidently engage with these issues, could improve outcomes on these projects.

Other states have begun implementing policies that incentivize smart siting, agrivoltaics, and mitigation fees to steer solar development to less productive farmland. While Texas may require a different approach, there are clear opportunities to integrate best practices from around the country using local expertise and collaborative planning frameworks.

As a national leader in both agriculture and energy, Texas can lead the way in demonstrating how Smart Solar development can strengthen farm viability, safeguard land for agriculture, and accelerate solar energy development. This report highlights that Texas does not need to choose between agriculture and solar energy, but instead can encourage, plan for, and design systems where both can thrive.

RESOURCES

Check out farmland.org/solar or contact:

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