

Getting started with AgriSolar

By the end of this webinar, learners can


1. Describe what AgriSolar is and what it is not.
2. Explain the advantages and challenges of setting up an agrisolar project on their property.
3. Identify first steps in getting started in their particular agrisolar project.



Advanced Prep:


- Input true/false poll questions in the virtual training platform



Zoom - 90 Minutes


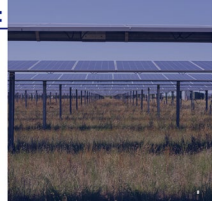

#	Facilitator Slide Notes	Time	Notes	Slide Text
	Contents <ol style="list-style-type: none">1. Welcome2. AgriSolar is...3. How I see it4. Research AgriSolar topic5. Scavenger hunt6. Final Debrief7. Call to action			
	Preparation Prior to conducting this workshop:			



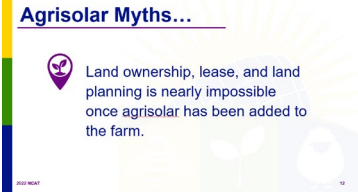
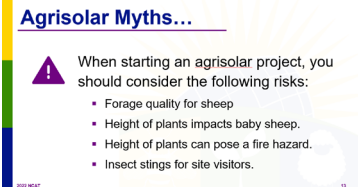
	<ol style="list-style-type: none"> 1. Read through the directions and supplemental materials to familiarize yourself with the procedures. 2. Open links to <ul style="list-style-type: none"> ○ https://www.agrisolarclearinghouse.org/contact ○ https://www.agrisolarclearinghouse.org/solar-decommissioning/ ○ https://www.agrisolarclearinghouse.org/agrisolar-ownership-lease-and-land-planning/ ○ https://www3.thedatabank.com/dpg/427/personal2.asp?newsession=1&formid=AgriSolar&c=20220629155521784465 3. Set up polls for AgriSolar is and Independent Research Topics activities. 4. Provide all participants and volunteers with session logistics including date, time, and online meeting information for your session. Consider sending a calendar invite at least one month in advance with all session logistics. 			
	<p>Welcome to Getting Started with AgriSolar.</p> <p>Please stay on mute unless you are speaking. We prefer cameras to be on. Please have a pen and paper handy.</p>	3 minutes	Lecture 	Welcome to Getting Started with AgriSolar


	<p>If you are watching this as a recording, we'd still like for you to interact with the information we're going to be sharing.</p> <p>[Facilitator note: Welcome guests as they arrive.]</p>			
	<p>AgriSolar is...</p> <p>AgriSolar is the co-location of agriculture and solar energy projects within the landscape. It can come in many forms: crops grown under and around solar panels, grazing animals under and around solar panels, beekeeping and pollinator habitat under and around the panels, and floating solar over a fish farm, are a few examples. In AgriSolar, you harvest the sun twice—once with the solar panel and a second time with crops, forage, honey, and habitat. AgriSolar helps you get the most productivity out of your land, while supporting the land, community, and ecosystem around it.</p> <p>AgriSolar is also known as dual-use or co-location. Agrivoltaic is another term you might hear, and this typically refers to crops grown under and around solar panels or solar grazing. Sheep are the most common solar grazing animals, but in recent years, cattle and hay operations under solar panels have started to sprout up across the country.</p>			<p>AgriSolar is...</p>
	<p>Poll Activity - subheading</p> <p>Let's get started by talking about what you know. We are going to jump right in with a quick poll determining what AgriSolar is and what AgriSolar is</p>	<p>15 minutes</p>	<p>Quick Poll</p> <p>Let's get started by talking about what you know.</p> 	

	<p>not. For those of you watching the recording, please grab that pen and paper and write down your answers so you can compare your thoughts with the information we're about to share.</p> <p>[Facilitator note: Open the poll to the participants. You should have set this poll up prior to the session. Each poll question is also on a slide, so remember to go to the next slide for each poll question. Ask participants why they answered the way that they did, and then offer the correct answer and additional information.]</p>		<p>Polling (Set up Polls before the session begins)</p>	
	<p><i>True or False: By 2050, America is projected to have 5 million acres of solar farms.</i></p> <p>Answer: False. By 2050, there are projected to be 10 million acres of solar farms.</p> <p>According to the Department of Energy Solar Future Study, by 2050 ground-based solar technologies will require 0.5% of the contiguous U.S. surface area. This amounts to roughly 10 million acres of land.</p> <p>Currently, there are less than half a million acres of land devoted to solar in the U.S. Only a small fraction of these solar developments are AgriSolar. As solar expands across the country, we have a choice to do something meaningful with the land under and around the panels. We can serve as</p>		<p>True or False:</p> <p>By 2050, America is projected to have 5 million acres of solar farms.</p> 	<p>True or False: By 2050, America is projected to have 5 million acres of solar farms.</p>

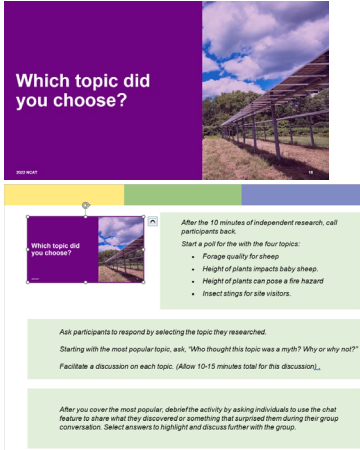
	<p>stewards of land by increasing ecosystem services like pollinator habitat, migratory pathways, and soil health. We can improve stormwater runoff at solar sites. We can help preserve the agricultural landscape in rural areas by keeping farmlands in the hands of farmers and the beauty of the rural countryside intact. Solar energy is a lucrative crop and it could make the difference in the financial viability of farms and ranches. We can increase community acceptance of solar by dispelling concerns about the industrial appearance of solar and the loss of farmlands and valued landscapes. We can improve the resilience of our energy grid and increase access to local food, all while creating clean, local energy.</p>			
	<p><i>True or False: AgriSolar in the United States exists mainly as research projects.</i></p> <p>Answer: False. There are many examples of AgriSolar throughout the country, and they range in size, ownership, type, purpose, and tenure. The AgriSolar Atlas includes many AgriSolar case studies: <u>AgriSolar Storytelling Atlas—AgriSolar Clearinghouse</u>.</p>		<p>Show Poll #2</p> <p>True or False: _____</p>  <p>AgriSolar in the United States exists mostly research as projects.</p>	<p><i>True or False: AgriSolar in the United States exists mainly research as projects.</i></p>
	<p><i>True or False: The three main types of AgriSolar are crops, grazing, and pollinators.</i></p> <p>Answer: True. There are other forms of AgriSolar, but these are the 3 main types.</p>		<p>Show Poll #3</p> <p>True or False: _____</p> <p>The three main types of AgriSolar are crops, grazing, and pollinators.</p> 	<p><i>True or False: The three main types of AgriSolar are crops, grazing, and pollinators.</i></p>

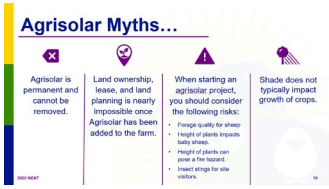
	<p>True or False: In Aquavoltiacs, fish, or shellfish, are grown under floating arrays.</p> <p>Answer: True! This is also known as Flotavoltaics. Other types of AgriSolar include</p> <ul style="list-style-type: none"> • Solar/Processing, which may include diary or coffee, or grain drying. Greenhouses, which can also fall under solar crops. 		<p>Show Poll #4</p>  <p>True or False:</p> <p>True or False: In Aquavoltiacs, fish, or shellfish are grown under floating arrays.</p>	<p>True or False: In Aquavoltiacs, fish, or shellfish, are grown under floating arrays.</p>
	<p>True or False: Farm crops dependent on pollination, that are located near a solar array, experience a 20% decrease in productivity.</p> <p>Answer: False. It's actually the opposite. In studies, they found it's about a 20% increase in productivity in these instances. Rebuilding America's prairies by co-locating solar arrays with pollinator habitats creates a win-win situation.</p>		<p>True or False:</p> <p>Farm crops dependent on pollination that are located near a solar array experience a 20% decrease in productivity.</p> 	<p>True or False: Farm crops dependent on pollination, that are located near a solar array, experience a 20% decrease in productivity.</p>
	<p>You may come to this webinar with a foundational knowledge about AgriSolar, or you may be brand new. This webinar is for you no matter what your background may be on this subject. The AgriSolar Clearinghouse is full of resources developed by the National Center for Appropriate Technology (NCAT) team of energy engineers and sustainable agriculture specialists, along with a national network of partners. The goal of this Clearinghouse is to connect businesses, landowners, and researchers with trusted resources to support the growth of co-located solar and sustainable agriculture. The AgriSolar Clearinghouse is funded by the Department of Energy's Solar Energy</p>	<p>2 minutes</p>	<p>Debrief</p> <p>Debrief</p> <p>The Agrisolar Clearinghouse aims to connect businesses, landowners, and researchers with trusted resources to support the growth of co-located solar and sustainable agriculture.</p> 	<p>The AgriSolar Clearinghouse aims to connect businesses, landowners, and researchers with trusted resources to support the growth of co-located solar and sustainable agriculture.</p>

	Technology Office.			
	<p>How I See It Let's play a quick game of "How I See It." Review each statement on the screen and decide if it is a myth or a fact. Write your response in the chat. Please don't look anything up, we want you to write down your gut reaction.</p> <p>[Facilitator note: Click through each topic. Read through the chat and call on individual participants to unmute themselves and say why they answered the way they did. There may not be a consensus on an answer, and that is okay. Don't give away the answer.]</p>	10 minutes total 2 mins this slide	<p>How I See It style discussion</p> 	
	AgriSolar is permanent and cannot be removed.	2	<p>Agrisolar Myths...</p> 	AgriSolar is permanent and cannot be removed.
	Land ownership, lease, and land planning are nearly impossible once AgriSolar has been added to the farm.	2	<p>Agrisolar Myths...</p> 	Land ownership, lease, and land planning are nearly impossible once AgriSolar has been added to the farm.
	<p>When starting an AgriSolar project, you should consider the following risks:</p> <ul style="list-style-type: none"> ● Forage quality for sheep ● Height of plants impacts baby sheep 	2	<p>Agrisolar Myths...</p> 	When starting an AgriSolar project, you should consider the following risks:

	<ul style="list-style-type: none"> ● Height of plants can pose a fire hazard ● Insect stings for site visitors 			<ul style="list-style-type: none"> ● Forage quality for sheep ● Height of plants impacts baby sheep ● Height of plants can pose a fire hazard ● Insect stings for site visitors
	<p>Shade does not typically impact the growth of crops.</p>	2		<p>Shade does not typically impact the growth of crops.</p>
	<p>Research AgriSolar Topic</p> <p>[Facilitator note: Open https://www.agrisolarclearinghouse.org/contact/]</p> <p>There are a few ways to get started on this site. On the right, we see a link to the Information Library. This a great place to get started when you need to find trusted resources on how to co-locate solar and sustainable agriculture.</p> <p>In the middle, you can see a link to the Forum. This is a community of people you can connect with who are also interested in sustainable agriculture.</p>	<p>30 minutes total</p> <p>5 mins this slide</p>	<p>Independent Research</p> <p>Let's do some research about these topics.</p> <ol style="list-style-type: none"> 1 Please go to: https://www.agrisolarclearinghouse.org/contact/ 2 Pick the topic from the last activity that you were most unsure of and research it! 	<p>Let's do some research about these topics. Please go to https://www.agrisolarclearinghouse.org/contact/.</p> <p>Please pick the topic from the last activity that you were least sure about and research it!</p>

	<p>On the left, you can see Technical Assistance which you can reach out to as you learn more about AgriSolar.</p> <p>The media hub contains original publications, such as best practices, case studies, blog posts, fact sheets, guides, webinars, tutorials, a podcast series, curated news articles, and a free-to-download image gallery.</p> <p>We just talked about four topics that may be a myth or may be a fact. Now, you have to do your research to determine the answers. Pick one topic and go out to the AgriSolar Clearinghouse to prove or debunk your answer. Please pick the topic from the last activity that you were least sure about and research it!</p>			
	<p>Here are your lists of topics. You have 10 minutes to research your topic independently. If you are viewing this as a recording, please pause the recording and make sure to do this as well. Good luck!</p>	<p>10 minutes</p>		<p>Topics</p> <ol style="list-style-type: none"> 1. AgriSolar is permanent and cannot be removed. 2. Land ownership, lease, and land planning are nearly impossible once AgriSolar has been added to the farm. 3. When starting an AgriSolar project,

				<p>you should consider the following risks: forage quality for sheep, height of plants impacting baby sheep, height of plants posing a fire hazard, and insect stings for site visitors.</p> <p>4. Shade does not typically impact the growth of crops.</p>
	<p>[Facilitator note: After the 10 minutes of independent research, call participants back. Start a poll with the four topics:</p> <ul style="list-style-type: none"> ● Forage quality for sheep ● Height of plants impacts baby sheep. ● Height of plants can pose a fire hazard ● Insect stings for site visitors. <p>Ask participants to respond by selecting the topic they researched.</p> <p>Starting with the most popular topic, ask, “Who thought this topic was a myth? Why or why not?”</p>	2 minutes	<p>Poll</p> 	Which topic did you choose?

	<p>Facilitate a discussion on each topic. (Allow 10-15 minutes total for this discussion)</p> <p>After you cover the most popular, debrief the activity by asking individuals to use the chat feature to share what they discovered or something that surprised them during their group conversation. Select answers to highlight and discuss further with the group.]</p>			
	<p>[Facilitator note: Use the following information to debrief each topic.</p> <p>1 AgriSolar is permanent and cannot be removed.</p> <p>Feedback:</p> <p>This is a myth. It is best to start with the end in mind when you are installing solar. Work with your solar developer to install low-impact solar, with a plan to remove, or decommission the array, at the end of the project. This is often at 25 years. Some people keep the solar panel racking system and refresh their solar panels and electrical equipment with newer equipment at the 25-year mark. If you want to remove the array, specify removal of the array and all equipment, and emphasize the restoration of the land to its original state in all contracts. You should also specify decommissioning cost responsibility, and that panels and array components must be recycled. More information on decommissioning and planning for decommissioning can be found in the</p>		<p>I added a slide here with all of the myths</p> 	

Information Library here: [Solar Decommissioning—AgriSolar Clearinghouse](#)

2. Land ownership, lease, and land planning are nearly impossible once AgriSolar has been added to the family farm.


Feedback:

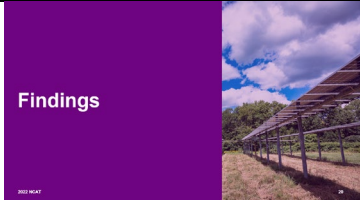
This is also a myth. AgriSolar is a part of land planning. It can be a way to keep your family farm in your family for generations to come. Income from the solar power, income from leases to solar developers, income as a solar grazer, or value added to your crops, are just a couple of ways it makes sense to include AgriSolar in your estate plan. More information can be found in the Information Library here: [AgriSolar Ownership, Lease, and Land Planning—AgriSolar Clearinghouse](#)



3. When starting an AgriSolar project, you should consider the following risks:

- Forage quality for sheep
- Height of plants impacts lamb

	<ul style="list-style-type: none"> ● Height of plants can pose a fire hazard ● Insect stings for site visitors <p>Feedback:</p> <p>These may be facts; consider the following:</p> <ul style="list-style-type: none"> ● Forage quality for sheep can be a risk if it isn't high-quality forage. The sheep could lose weight. ● Height of plants can be an issue for baby sheep that get separated from their mothers and get lost. ● Tall plants could pose a fire hazard, but it is uncommon and is easily addressed with maintenance plans such as grazing, mowing, and low-height pollinators. ● Insects may sting site visitors. Always wear personal protective equipment at AgriSolar sites. <p>4. Shade does not typically impact the growth of crops.</p> <p>Feedback:</p> <p>This is a myth. Shade does impact crop growth for some types of plants, particularly plants that require full sun. But shade tolerant plants grow very</p>			
--	--	--	--	--

	<p>well in the shade of solar panels. Research has shown an increase in yield in basil, lettuce, peppers, and tomatoes. In pollinator plants, research has show a longer bloom time. The trade-off in plant growth for full-sun plants, when you consider the added benefit of solar production, is often worth it from a whole-farm perspective. Shade-tolerant or partial-shade tolerant plants are well-suited for AgriSolar. The shade also helps keep crops cool in extreme heat and can help conserve water. The solar panels also serve as a form of frost, hail, and wind protection. The cooling effect of the crops also increases the productivity of the solar panels. The panels have an optimal operating temperature of 77 degrees Fahrenheit and the cooling effect of the plants can have a positive impact on solar production.</p> <p>In drought-stressed areas, like the southwestern United States, the shade of solar panels can help reduce crop water needs by up to half.</p>			
	<p>Scavenger Hunt Now that we have discussed a few myths and facts, and you are familiar with using the AgriSolar Clearinghouse, let's practice setting up an AgriSolar project.</p>	<p>20 minutes total</p> <p>15 minutes this slide</p>	<p>Scavenger hunt</p>  <p>Scavenger Hunt for Resources Research the topic that interests you the most from the following list.</p> <ul style="list-style-type: none"> • How many types of AgriSolar can you have at one farm? • Financial incentives for AgriSolar • Selecting appropriate crops for your region • Selecting pollinator plants for your region • Setting up an apiary • Getting started with grazing • Finding suitable land for AgriSolar 	<p>Scavenger Hunt for Resources Research the topic that interests you the most from the following list.</p> <ul style="list-style-type: none"> • How many types of AgriSolar can

	<p>Working independently, you need to hunt for resources in the Clearinghouse or in the community to set the project up for success. If you are watching this as a recording, please do the exact same steps I describe for this activity. You have 10 minutes to do your research. You can pick the topic that interests you the most. Your topics are:</p> <ul style="list-style-type: none"> ○ How many types of AgriSolar can you have at one farm? ○ Financial incentives for AgriSolar ○ Selecting appropriate crops for your region ○ Selecting pollinator plants for your region ○ Setting up an apiary ○ Getting started with grazing ○ Finding suitable land for AgriSolar <p>[Facilitator note: After 10 minutes, ask them to finish their work and call out individuals to take themselves off of mute to share their findings.]</p>			<p>you have at one farm?</p> <ul style="list-style-type: none"> ● Financial incentives for AgriSolar ● Selecting appropriate crops for your region ● Selecting pollinator plants for your region ● Setting up an apiary ● Getting started with grazing ● Finding suitable land for AgriSolar
	<p>Let's take some time to discuss your findings. Please take yourself off mute to share as I cover each topic. What did you learn about how many types of AgriSolar you can have at one farm?</p>	<p>5 minutes</p>		<p>Findings</p>

	<p>[Facilitator note: Ask some or all of the following debrief questions.]</p> <ul style="list-style-type: none"> • What was the first step you needed to take to set up your project? • How challenging was it to set up your project? • What was the biggest challenge you saw as you were setting up this project? <p>[Facilitator note: Ask about each topic. Discuss points of interest, challenges, surprises, and common themes.]</p>			
	<p>Final Debrief Please use the chat feature to ask any questions you have about what we discussed today.</p> <p>[Facilitator note: Use about 5 minutes to select and answer questions from chat.]</p>	5 minutes	<p>Final Debrief Chat/Q&A</p> <p>Questions?</p> 	Questions?
	<p>Call to Action Before we end our webinar today, I'd like to walk you through signing up for our newsletter. Please follow along and sign up as I walk you through the steps.</p> <ul style="list-style-type: none"> ○ Sign up on the home page or via this link: Sign Up for AgriSolar Clearinghouse Info (thedatabank.com). It is a great resource for connecting to the 	5 minutes	<p>Final Call to Action</p>  <p>Sign up for our newsletter: https://www3.thedatabank.com/dpg/427/personal2.asp?newsession=1&formid=AgriSolar&c=20220629155521784465</p> <p>Resources:</p> <ul style="list-style-type: none"> • Forum • Connect Page • Events Calendar • Media Hub • AgriSolar@ncat.org 	<p>Sign up for our newsletter:</p> <p>https://www3.thedatabank.com/dpg/427/personal2.asp?newsession=1&formid=AgriSolar&c=20220629155521784465</p> <p>Resources: Forum</p>

	<p>AgriSolar community, finding out about AgriSolar Clearinghouse field trips and events, reading the latest best practices, projects, opportunities, and AgriSolar news.</p> <p>Let's look at a few other resources you can bookmark for future use.</p> <p>To engage with our community, you can visit:</p> <ul style="list-style-type: none"> ○ The Forum. Join the forum and engage in posts, meet other AgriSolar supporters, and keep up-to-date on AgriSolar developments. ○ The Connect page includes a list of frequently asked questions and their respective answers, contact information for technical assistance, request for user feedback surveys, and directions to the Information Library. ○ The Events calendar is a great resource for future trainings, field trips, solar farm-to-table events, AgriSolar conferences, webinars, and classes. ○ The Media Hub contains original publications, such as best practices, case studies, blog posts, fact sheets, guides, webinars, tutorials, a podcast series, curated news 			<p>Connect Page Events Calendar Media Hub agrisolar@ncat.org</p>
--	--	--	--	---

	<p>articles, and a free-to-download image gallery.</p> <ul style="list-style-type: none">• Technical assistance is offered throughout the website, via the chatbot, which goes to a live person Monday through Friday, 8 am - 5 pm Mountain Time. You can also email agrisolar@ncat.org for technical assistance or call via the phone number provided on the Connect page.			
--	---	--	--	--