## Planning Commission Comments - OPALCO 2024 Docket Requests Executive Summary

- Washington plans to cut GHG emissions in half over the next six years.
- While essential to slow climate disruption, experts forecast a supply-demand shortfall of over 25 GW by 2035.
- Summer and winter mainland rolling blackouts are imminent and will increase as the supply/demand shortfall accelerates.
- The county Comp Plan calls for "energy independence." OPALCO estimates we can achieve that in summer and power essential services in winter with just 135 acres of microgrid on each ferry-served island.
- Just as we did with the broadband crisis, OPALCO will move mountains to get the job done. We just need the county to commit.
- We urge the Planning Commission and County leadership to send a clear signal to islanders that when the first rolling blackouts hit, the county gave reliable local energy resilience their highest priority.
- Gov. Inslee has said the state needs to permit more green energy projects and can't be deterred by local opposition.
- Funding for local renewable energy projects is available now, from state and federal governments.
- Agri-solar represents a financial lifeline for farmers to diversify incomes, keep farms in the family, and farmers on the land as stewards. The shade agri-solar offers helps grazing animals and crops thrive in a climate-changed world.
- Community solar expands access, especially among multifamily building occupants, renters, and low-and moderate-income households, extending solar adoption to communities that would have otherwise struggled to adopt rooftop solar.
- Rooftop solar doesn't work during outages, and will only provide a small fraction of what is needed.
- The **Comp Plan Vision** and **Challenges** highlights the need for **energy independence**.

### Background

Washington State's 2021 Energy Strategy projects a doubling of electric generation by 2050. Washington and the US are trying to cut GHG emissions by 50% by 2030, hence the region's priority of rapidly decommissioning coal plants, which produce about 14% of the region's energy.

### 2030 is less than six years away.

Experts forecast a supply-demand <u>shortfall</u> of over 25 GW by 2035, equivalent to 1,000 San Juan Counties. That shortfall can only be filled with the construction of clean, renewable generation such as solar and wind power. Until that shortfall is met, the likelihood of rolling blackouts and price shocks in winter and summer becomes exceptionally high. Regional power planners warn that those mainland outages are imminent with the next significant heat dome or cold snap. In fact, during the January 2024 cold snap, we narrowly escaped a regional mainland outage.

New solar and wind power projects use a lot of land. Over 70% of utility-scale renewable energy projects are canceled due to public pushback, also known as "Not in my backyard!" (NIMBY). To avoid these grid outages, State and Federal governments are racing to streamline land use permitting to accelerate renewable energy deployment.

Gov. Jay Inslee recently said, "Governments will have to overcome "NIMBYism," including in Washington, to achieve clean-energy goals. Regulatory reforms are needed to prevent local opponents from delaying projects."

"Washington state faces the stark reality that without a rapid buildout of new clean energy generation and transmission, the dependability of our electricity grid is at risk."

Inslee has made climate change the signature issue of his administration. He has said the state needs to permit more green energy projects and can't be deterred by local opposition.

Every utility in the state has substantial renewable energy projects in the planning stages to meet the need as we reduce our dependence on fossil fuels. Many grants and incentives help pay for these projects but are time-sensitive. We need to make permitting renewables more efficient. Without that, the county is very vulnerable to mainland outages.

The county Comp Plan calls for "energy independence." OPALCO estimates we can achieve that in non-winter months, with just 135 acres of microgrid on each ferry-served island. To put this in perspective, see the tiny red squares at the center of each island on the map at right.

In the winter, when solar power is less, and the load doubles, that same capacity can power essential services during mainland outages.

Islanders can subscribe to these microgrids through OPALCO's Community Solar program, which helps fund these projects and mitigate mainland price shocks and outages.

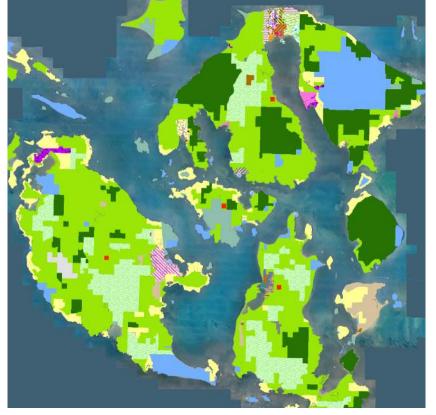
Thanks to the Department of Commerce grants, a portion of microgrid energy production supports low-income households.

The microgrids can be deployed in

collaboration with farmers to help with farm economics, grazing, and growing shade-loving crops such as brassicas.

In summary, local renewable energy generation helps in several ways:

- 1. **The Local Economic-** When the power goes out, the economy stops. Lawrence Berkley National Lab (LBNL) outage calculator shows that outages cost the local economy over \$3.4 million daily.
- 2. **Vulnerable Populations** San Juan County has an enormous senior population, some of the lowest working wages in the state, and substantial low-income households. Outages usually happen during weather extremes, when these islanders are most vulnerable. Without power, heating, air conditioning, water, and food are all at risk.
- 3. Low-income Households Recent LBNL research shows that Community Solar expands access, especially among multifamily building occupants, renters, and low—and moderate-income households. In 2023, community solar adopters were about 6.1 times more likely to live in multifamily buildings than rooftop solar adopters, 4.4 times more likely to rent, and earned 23% less annual income. These results suggest that Community Solar has extended solar adoption to communities that would have otherwise struggled to adopt rooftop solar.



- 4. **Collaborating with farmers** Peter Sinclair, with Groundwork Center for Resilient Communities, notes that lots of farmers love solar power because "clean energy development, solar and wind, represent a financial lifeline to diversify incomes, keep farms in the family and farmers on the land as stewards." The 2022 USDA Ag Census of San Juan County farmland economics shows that we have 264 farms on 19,571 acres, averaging 74 acres per farm. Even with government subsidies, each farm loses an average of \$3,754 annually. And the cost of farmland is rising rapidly as our population swells. The economics are not sustainable. To increase local food production, we need healthy farm economics. Agri-solar is raised on stilts, allowing farming beneath. It increases farmland productivity and provides dual use of the sun producing food and energy. That energy produces additional income for the farm.
- 5. **Rooftop Solar Doesn't Work During Outages -** Rooftop solar will be a small fraction of the 2030 local generation mix and won't work during power outages. Microgrids, on the other hand, are designed to power critical community services during outages and are lower cost thanks to grants and economies of scale. They also provide additional community benefits through collaboration with local farmers. The planned Bailer Hill Microgrid will more than double the county's local energy compared to all the rooftop solar, which took 13 years to build and at a small fraction of the cost.
- 6. **Reduce County GHG Emissions** All this clean local renewable energy helps the county rapidly reduce GHG emissions, which the state requires. About 80% of county GHG emissions come from just two things: transportation and heating. OPALCO and the state are working together to accelerate the electrification of transportation and heating.

## **Comp Plan Elements Related to the Docket Requests**

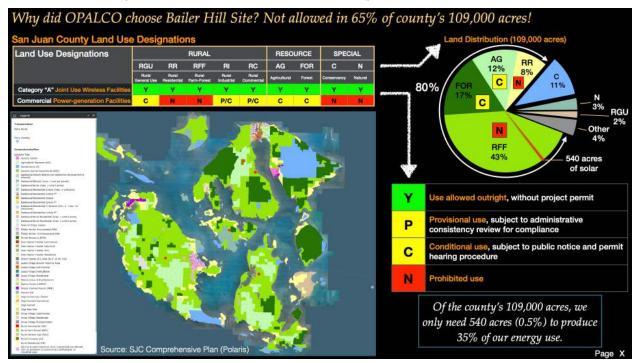
- The **Comp Plan Vision** and **Challenges** highlights the need for **Energy Independence**.
- Utilities Element, Goal 1, Policy 4 says "Cooperate with utility providers in siting facilities for new and alternative technologies to save money and promote reliability."
- Utilities Element, Goal 2, "Allow for the timely and cost-effective provision of utility services to County residents..."
- Utilities Element, Goal 3, "Foster predictability and timeliness in processing permit applications for utilities to allow for necessary development, maintenance, repair, improvement, and expansion of utility facilities in a timely and efficient manner." Policy 1 says "Review permitting processes to identify ways to improve predictability, timeliness, and efficiency of utility permitting."
- Utilities Element, Goal 5, Policy 7 says, "Ensure that solar installations are sited and designed in a manner that minimizes impacts on agricultural land, allows for flexibility in future agricultural activity and maximizes potential for multiple benefits from "agrivoltaics"."
- Utilities Element, Goal 7, Collaborate with the Orcas Power and Light Co-Operative (OPALCO) in achieving its goals for local energy resiliency, Policy 4 says, "Allow <u>pilot programs</u> to evaluate new renewable energy sources consistent with the goals and policies of this Plan and that comply with all regulations." Policy 7 says, Support the transition toward energy independence from the mainland by up to 50 percent by the year 2040."

## A New Model For Utility Local Renewable Energy Land Use

In 2013, a San Juan Island Library Board member referred to the county's poor quality of local broadband as a "digital desert." In response to this broadband crisis, OPALCO, the EDC, and the county came together to innovate a new approach to rapidly deploying high-speed wireless broadband atop utility poles across the county. That innovation was the Joint Use Wireless Facility (JUWF), which allowed for pre-approved land use permits for utility poles around the county to host wireless broadband systems. Within a year, islanders and first responders had largely ubiquitous access to very high-speed broadband.

In 2024 and beyond, San Juan County will be highly vulnerable to mainland power outages. We are a "local renewable energy desert." Just as the county and OPALCO collaborated to solve the broadband problem, we can solve the local renewable energy problem.

The map below compares the JUWF land use designations to the Commercial Power Generation Facilities code. The current code prevents microgrids and agri-solar on over 65% of county land. Most open land that can accommodate solar arrays is either AG (conditional use) or RFF (prohibited).



## **OPALCO Docket Request Commentary**

Current permitting limitations threaten grants for local utility renewable energy projects like Bailer Hill. Those grants include important Washington Clean Energy Funds for helping low-income households with energy from the Bailer Hill agri-solar array.

To streamline the local utility-scale renewables permitting process, OPALCO has submitted two docket requests.

### Request 24-0007 - Agri-Solar Generation

OPALCO requested adding a new land use to the "Agricultural" and "Forestry Use" designations (with the exception of Special Lands), to include "Agri-Solar Generation." This would encourage increased local renewable energy and diversify farm income to improve the stressed economics of local food production, improve water management by reducing how much precious water is lost to evaporation and transpiration, and provide cooling shade to grazing animals and shade-loving crops, e.g., brassica, greens, bees, etc. It would permit agri-solar generation in rural areas and AG Resource Lands and conditional use in Forest Resource Lands.

Referring to the current Land Uses, Agricultural and Forestry Uses section below, the agricultural uses, especially on AG land, are commonly Y, with a few provisional, conditional, or P/C. This helps strike a balance for critical energy systems the public depends on. The proposed Agri-solar generation Land Use is shown in **BLUE**. It will offer substantial public benefit, especially for farmers, and transform the County's local energy capabilities.

Land Uses	Rural Designations					Resource Lands		Special Lands <sup>(4)</sup>	
	RGU	RR	RFF	RI	RC	AG	FOR	с	Ν
Agricultural and Forestry Us	es								
Agricultural activities	Y	Υ	Y	Y	Y	Y	Y	Y	Ν
Agri-solar generation	Р	Ρ	Ρ	Р	Ρ	Р	С	N	Ν
Forest practices, no processing <sup>(8)</sup>	Y	Y	Y	Y	Y	Y	Y	Y	Ν
Lumber mills, portable	Y	Υ	Y	Y	Y	Y	Y	P/C	Ν
Nurseries	Y	Ν	Y	Y	Y	Y	Y	N	Ν
Small-scale slaughterhouses	Р	Ν	Р	Y	Y	Р	Р	N	Ν
Unnamed agricultural and forestry uses	с	C	С	С	С	с	С	N	Ν

#### Classification of Uses by Land Use Designation

A definition for "Agri-solar generation" in UDC section 18.20.010 should also be adopted as follows: "Agri-solar generation" means equipment or machinery that produces fossil-free electricity from solar renewable energy sources co-located with Rural Designation and Resource Lands used for agriculture and can include energy storage.

OPALCO appreciates that County DCD Staff "recommend <u>approving</u> this request and putting a project on DCD's work plan to investigate the opportunities and constraints associated with 'agri-solar' cooperative power generation land uses in San Juan County so we can better address future proposals and prevent unintended losses to aesthetic resources, shorelines, resource lands, and critical area functions."

We include extensive information on agri-solar at the end of this document. Though agri-solar started in Europe, numerous Northwest agri-solar projects are underway, with Oregon State University leading the way. San Juan County can learn from their experience to lighten the load on DCD. Additionally, OPALCO welcomes the opportunity for the community to study the Bailer Hill project as we collaborate with Oak Knoll Farms to model new economic and stewardship models for farming in the county.

The urgency to develop local energy resources promptly is not unlike the urgency of developing the Joint Use Wireless Facilities that OPALCO and the County collaborated on to quickly transition inadequate broadband facilities to modern communication system standards. That joint use wireless land use facilitated and revolutionized local home, business, and first responder communication and broadband services. The proposed utility renewable power-generation facilities' land use will offer similar public benefits and transform the county's local energy capabilities.

Accelerating major local renewable energy capacity ensures a cleaner, more resilient, sustainable energy future, reduces our use of fossil fuels, and mitigates the devastating impacts of mainland outages and climate change.

In the spirit of collaboration and desire to quicken the pace of Joint Use Wireless rollout, we encourage planning and DCD staff to consider a "Y" designation in place of "P/C" to speed the rollout of utility-scale local renewable energy, especially as the Bailer Hill project provides deeper insight into agri-solar deployment on ag land.

### **Request 24-0008 - Commercial Power-generation Facilities**

The second request is to add a land use to "Utilities Uses" and would be called "Utility Renewable powergeneration facilities" for modern renewable energy systems that are clean and quiet, unlike legacy non-renewable power generation systems that may be deployed in the code's current "Commercial power-generation facilities." The current land use designations exclude utility-scale solar projects from 63% of San Juan County land, making agricultural dedicated land one of the only options for these projects. It would allow for provisional/conditional use permitting for utility renewable-power generation facilities in all rural designated areas and "AG Resource lands" and conditional use in "Forest Resource Lands."

Referring to the current Land Uses, Utility Uses section below, the utility functions are commonly provisional/ conditional (P/C) or, in some cases, P or Y. This helps strike a balance for critical energy systems the public depends on. The proposed Utility renewable power generation land use is shown in **BLUE**.

classification of uses by Land Use Designation										
Rural	Designa	ations		Resource Lands		Special Lands <sup>(4)</sup>				
RGU	RR	RFF	RI	RC	AG	FOR	с	Ν		
2										
Y	Y	Y	Y	Y	Y	Y	Y	Y		
P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C		
Р	Ρ	Р	Р	Р	P/C	P/C	P/C	P/C		
P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C		
P/C	P/C	P/C	P/C	P/C	P/C	С	N	N		
P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C		
P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C	P/C		
	Rural RGU P/C P/C P/C	Rural Designa RGU RR Y Y P/C P/C P/C P/C P/C P/C P/C P/C	Rural DesignationsRGURRRFFYYYP/CP/CP/CPPPP/CP/CP/CP/CP/CP/CP/CP/CP/CP/CP/CP/C	Rural DesignationsRGURRRFFRIYYYYP/CP/CP/CP/CPPPPP/C	Rural DesignationsRGURRRFFRIRCYYYYYP/CP/CP/CP/CP/CPPPPPP/C	Rural Designations Resource   RGU RR RFF RI RC AG   Y	Rural DesignationsResource LandsRGURRRFFRIRCAGFORYYYYYYYP/CP/CP/CP/CP/CP/CP/CPPPPPPP/C	Rural DesignationsResource LandsSpecial Lands(4)RGURRRFFRIRCAGFORCYYYYYYYYP/CP/CP/CP/CP/CP/CP/CPPPPPP/CNP/C		

### Classification of Uses by Land Use Designation

Unfortunately, county DCD staff recommended <u>rejecting</u> this request, saying, "The code already allows for this use and unnamed utility uses. It is a lower-priority item that could be considered in a future year's work plan. In addition, work on other docket requests recommended by staff may provide clarity on whether there is a need to differentiate between power generation facilities in terms of land use."

As a reminder, **Washington state has set an objective of cutting GHG emissions in half in 6 years and is making funding available now to support that objective**. <u>There are docket requests that have been in the queue</u> <u>for six years without action</u>. County DCD staff are overwhelmed. **Without a clear signal from the Planning Commission and County Council that rapidly preparing the county for mainland rolling blackouts is a priority, these docket requests will go nowhere.** 

## We need all hands on deck - agri-solar and commercial solar. We request the Planning Commission give <u>both</u> OPALCO docket requests its approval and highest priority.

## We urge the Planning Commission and County leadership to send a clear signal to islanders that when the first rolling blackouts hit the mainland, the county gave reliable local energy resilience their highest priority.

As discussed above, the urgency of developing local energy resources promptly is not unlike the urgency of developing the Joint-Use Wireless Facilities that OPALCO and the County collaborated on to quickly transition inadequate broadband facilities to modern communication system standards. That joint-use wireless land use facilitated and revolutionized local home, business, and first responder communication and broadband services. The proposed utility renewable power-generation facilities for land use will offer similar public benefits and transform the county's local energy capabilities.

Accelerating major local renewable energy capacity ensures a cleaner, more resilient, sustainable energy future, reduces our use of fossil fuels, and mitigates the devastating impacts of mainland outages and climate change.

In the spirit of collaboration and desire to quicken the pace of Joint Use Wireless rollout, we encourage planning and DCD staff to consider a "Y" designation in place of "P/C" to speed the rollout of utility-local renewable energy, especially as the Bailer Hill project provides deeper insight into agri-solar deployment on ag land.

# Just as we did with the broadband crisis, OPALCO will move mountains to get the job done. We just need the county to commit

### Comments on the Friends of the San Juans Docket Requests

OPALCO appreciates the Friends of the San Juans' consideration of advancing clean, local, renewable energy in the county. We offer the following comments on their two docket requests.

### Request 24-0005: Prohibiting or limiting commercial power-generation facilities

OPALCO agrees with the county's analysis of this proposal. For added consideration, OPALCO recommends the county factor in rapidly emerging trends for renewable green hydrogen, which we see replacing fossil fuels for heating, powering large vessels, trucks, and aircraft, and long-term energy storage. As with fossil fuels, there will be the need for the siting of green hydrogen storage tanks and related infrastructure.

### Request 24-0006: Limits to local renewable energy facilities

OPALCO urges that this docket be rejected. Limiting access to suitable land for agri-solar slows the rollout of local renewable energy. Using the Joint Use Wireless example above, this request keeps us in the "local renewables desert" well past 2030.

Not all farm and resource land is prime. Agri-solar can help enhance prime land with partial shade and restore sub-prime land with enlightened agri-solar farming best practices.

- Agri-solar has been demonstrated to work well on a variety of farmland, not just impermeable surfaces.
- Agri-solar can help farmers improve grazing and shade-loving crop production in a rapidly heating, climatedisrupted world.
- It helps the economics of farming improving the economics of farming and increasing the affordability of expensive county ag land that would otherwise be out of reach economically.
- OPALCO can lease a portion of the farmer's land for 25 years or more, providing a steady additional income, with the promise of working <u>collaboratively</u>, developing the land carefully, and leaving it restored at the end of project life (typically 25+ years).

This spirit of collaboration and good stewardship was well demonstrated during the Joint Use Wireless Facility collaboration between OPALCO and the County. The 40+ poles that now host broadband wireless systems were installed sensitively with respect to the appearance and siting.

Oak Knoll Farm has spoken well of OPALCO's collaborative spirit and the opportunity for agri-solar to benefit both the farmer and the community served by the OPALCO co-op.

Co-op members have been contacting OPALCO about donating their land to OPALCO for the development of local renewable energy. This docket request would hinder such generous visionary support for local renewable energy.

We encourage Planning and County DCD staff to find the proper balance to help the community increase local renewable energy and climate resilience. Business as usual is not a plan. Climate disruption is accelerating.

## Agri-Solar Background

"Across the country, farmers, landowners, researchers, and solar companies are working together to harvest the sun twice: once with crops, honey, pollinators, and forage for grazing animals, and again with solar panels. This co-location of solar and agriculture is known as agri-solar or agri-voltaics.

### **Agri-solar benefits**

- Improved farm economics from solar energy sales
- Increased access to ag land that would otherwise be unaffordable
- Reduce climate impacts, including:
  - Reduce soil evaporation and plant transpiration
  - Shade cooling grazing, bees, sun-sensitive crops, broccoli, etc.
  - Pollinator habitat diversity safeguards soil health, improves stormwater retention, reduces wind and soil erosion

### Background

Climate change is accelerating globally. Washington state's 2021 Energy Strategy, Climate Commitment Act, and Clean Energy Transformation Act set a high bar to reduce carbon emissions by 50% by 2030 and net-zero by 2050. The entire region is racing against the clock to decommission fossil-fueled power generation and replace it with clean renewables. The county's recent Greenhouse Gas (GHG) Inventory identified fossil-fueled transportation and heating contributing to 81% of county GHG emissions. Electrification of driving and heating is projected to double the amount of electricity needed by 2050.

But Washington is reducing fossil generation faster than replacing it with renewables. OPALCO and northwest energy forecasters both expect an increased probability of major region power outages and blackouts. **The more local** generation we have in place, the better the County can ride through outages and avoid surges in mainland power market rates. OPALCO has a goal of producing at least 35% of our energy locally. Agri-solar is the key. State and federal governments are providing a variety of grants and incentives to accelerate a rapid transition to agri-solar.

### Agri-solar: Helping the farmer produce more food, energy, better income, and climate resilience

Agri-solar generation is being deployed in farmland worldwide and is proving much more cost-effective and efficient than rooftop solar. **In less than a year, the most recent planned Bailer Hill agri-solar project will more than double the local energy in the county**, compared to <u>all</u> the rooftop solar in the county, which took 13 years to build. And at a small fraction of the price and time to build rooftop solar.

The 2022 USDA Ag Census of San Juan County farmland economics shows that we have 264 farms, on 19,571 acres, averaging 74 acres per farm. Even with government subsidies, **each farm loses an average of \$3,754 annually**. And the cost of farmland is rising rapidly as our population swells. The economics are not sustainable. **To increase local food production, we need healthy farm economics**. Agri-solar is raised up on stilts, allowing farming beneath. It increases farmland productivity and provides dual use of the sun - producing food <u>and</u> energy. That energy produces an additional income for the farm of about \$8,300 per acre per year, turning the typical farm here cashflow positive. **35% of county electricity use could be generated with just 540 acres of agrisolar – just 2.8% of all Ag land**.

Oregon State University College of Agricultural Sciences has been leading the way in Agri-solar. Here is what they and others have to say (<u>links</u> available on the other side):

"A recent <u>OSU study</u> estimates that converting just 1% of American farmland to agri-solar could meet our national renewable energy targets and save water and create a sustainable long-term food system. It will also create new revenue opportunities for family farms, which are currently facing increasing economic challenges, with a 23% increase in bankruptcy filings over the past year."

"Agri-solar provides a rare chance for true synergy: more food, more energy, lower water demand, lower carbon emissions, and more prosperous rural communities."

"Agri-solar aims to transform this competition into <u>synergy</u>: farming operations and solar development can coexist and reap benefits by sharing land. Their widespread implementation can help popularize solar energy in agriculture-dependent communities hesitant to welcome solar development."

Helpful Links	Link Q/R Code
Harvesting the Sun - This video is chock full of agri-solar info. Featuring experts from Oregon State University (OSU), the National Renewable Energy Labs (NREL), and others. In Harvesting the Sun, the leading voices of the agri-voltaic movement come together to share their stories and shine a light on a climate solution that can increase farm profitability, save valuable water, improve the soil, provide shade for farm workers, develop valuable ecosystem services, and increase the resiliency of rural communities.	
Solar on Farmland - Opportunities and Considerations in NW Washington - This excellent 88 minute video is moderated by Faith Van De Putte, San Juan County Agricultural Resources Committee, hosted by WSU SJC Extension and SJC ARC. It features farmer and OSU engineer Chad Higgins. In the face of climate change and development pressure, Northwest Washington needs both solar power generation and increased protection of agricultural land. Agrivoltaics are an emerging strategy that incorporates photovoltaic arrays into agricultural systems. We take a look at some pros and cons of adding solar to a farm operation, offer some considerations for where and when to site solar on a farm, and discuss what to include in your decision- making tree as you think about adding solar arrays to your farm or land. We also hear about the impact of solar on agricultural ecosystems, the opportunities it provides, and a brief overview of the costs of installation and incentives that are available. This presentation is geared toward farmers and agricultural landowners, although all are welcome.	
How "agrivoltaics" can provide more benefits than agriculture and solar photovoltaics separately - "Agrivoltaics increase land use efficiency without sacrificing much in the way of either energy or food production. Furthermore, many agrivoltaic configurations appear even to enhance both food and energy production while at the same time reducing the environmental impact from pursuing each activity as a standalone.	
Rural Energy for America Program Guaranteed Loans & Grants - This USDA program provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements.	
Made in the Shade: The Promise of Farming with Solar Panels - Natural Resources Defense Council Boulder County "totaled up all the power that rooftop solar would produce and found that it wouldn't even come close to providing all the power that the county consumes."	
Agrivoltaics Combines Production of Agriculture and Solar Power - Sierra Club "Agrivoltaics, which pairs solar panels (photovoltaics) with agriculture, is a double-duty climate solution that yields benefits to farmers while minimizing the Nation's need to use undeveloped natural lands for solar energy development."	

Helpful Links	Link Q/R Code
Sustainable Farm Agrivoltaics - Oregon State University and Chad Higgins are pioneering agri- solar. "This new technology promises to improve food production and reduce water use, while also creating energy and additional revenue. Essentially, the solar panels placed on the same land where crops are grown allow growers to harvest the power of the sun twice."	
Producing Solar Energy While Protecting Farmland - Yale Center for Business and the Environment "Agri-solar blends complementary land uses and eliminates the false "food or energy" dichotomy that has tradition- ally dominated discussions about solar-agricultural land use."	
<b>Eagle Point Solar Farm</b> - Case study: Eagle Point solar farm in Oregon sets precedent for solar apiaries in the United States. <i>"Pollinator-friendly solar farms are growing increasingly common, but Pine Gate Renewables is taking solar farm innovation a step further with a record-setting dual use of solar farmland. The utility-scale solar is largest solar farm apiary in the United States at this time. The 9.9-MW project spans over 41 acres."</i>	