

Opportunities and Challenges for Farmland in Solar Siting in Rural New York

2023 Hudson River Symposium:
Landscape Tradeoffs as New York Transitions to
Renewable Energy

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American Farmland Trust



Non-profit founded in 1980 committed to saving America's farmland

- Protecting farmland from development
- Promoting sound farming practices
- Keeping farmers on the land

Loss of Farmland

Poorly Planned Development

Weakening Farm Viability

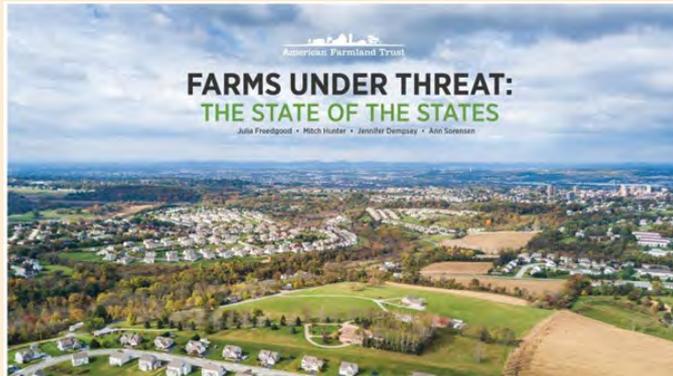
Aging Farmers &
Land Transfer

Climate Change

Renewable Energy



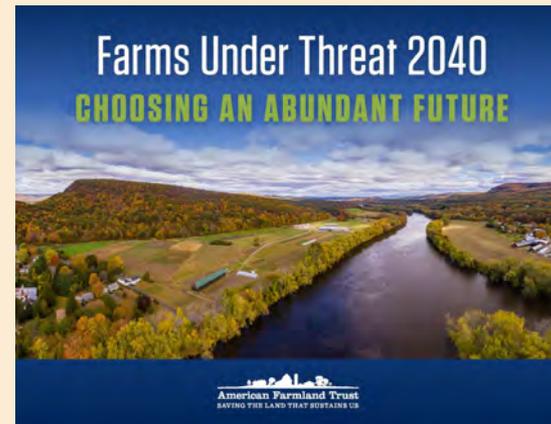
Farms Under Threat Reports



Farms Under Threat: The State of the States (2020)

- looked at agricultural land that was developed or converted to uses that threaten farming between 2001 and 2016.

	2001-2016	Business as Usual - 2016-2040	
	Acres Lost	Acres Lost	% of farmland
CT	23,000	55,000	16%
MA	27,200	73,800	15%
RI	3,600	8,100	15%
NH	11,600	35,600	8%
ME	17,700	53,400	5%
NY	253,500	452,000	5%
VT	21,400	41,200	3%



Farms Under Threat 2040: Choosing an Abundant Future (2022)

- Mapped three Scenarios of development between 2016 and 2040
 1. Business as usual
 2. Runaway Sprawl
 3. Better Built Cities

These numbers do not factor in potential farmland lost to solar development

NY Climate Leadership and Community Protection Act (CLCPA): 6.4 GW → 60 GW solar capacity by 2040



Learn more at seia.org/states

Where Are Solar Projects Built?

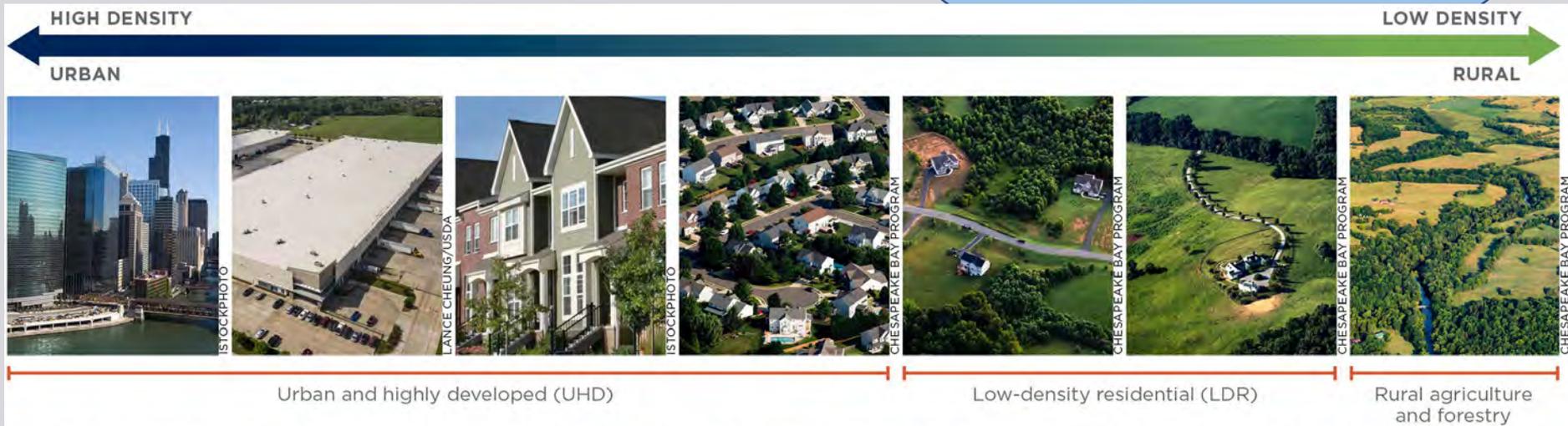
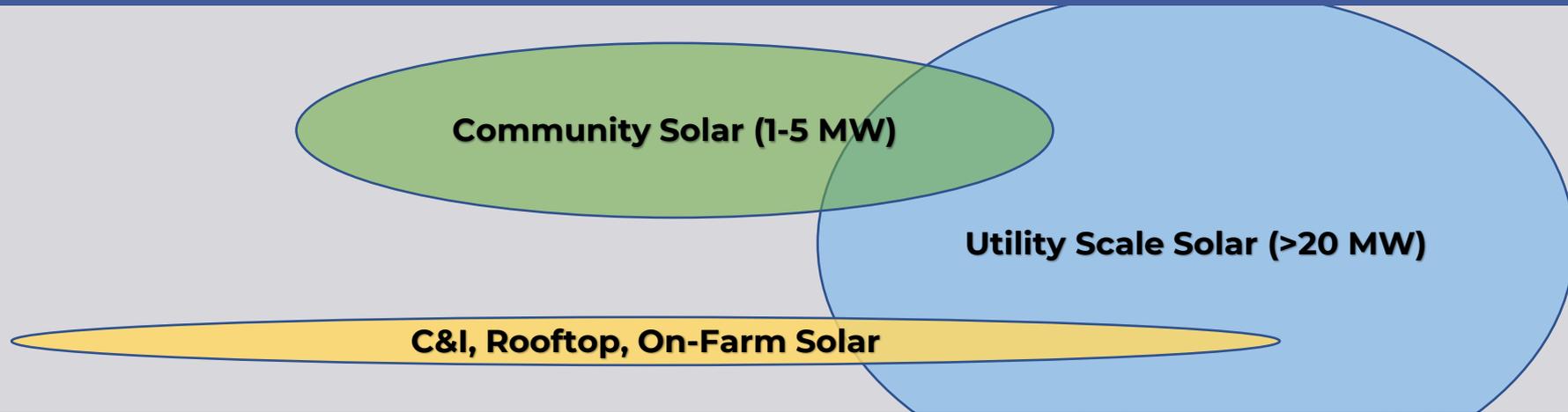


Figure 2. Urban and highly developed (UHD), low-density residential (LDR), and rural land uses exist on a continuum from high-density urban areas to low-density rural areas. The UHD category encompasses dense urban cores, suburbs, and highly developed areas like warehouses. UHD transitions into LDR in residential areas where house lots exceed 1–2 acres. The LDR category also encompasses very large-lot residential areas, which might appear rural at first glance but are primarily used for housing, not for production agriculture.

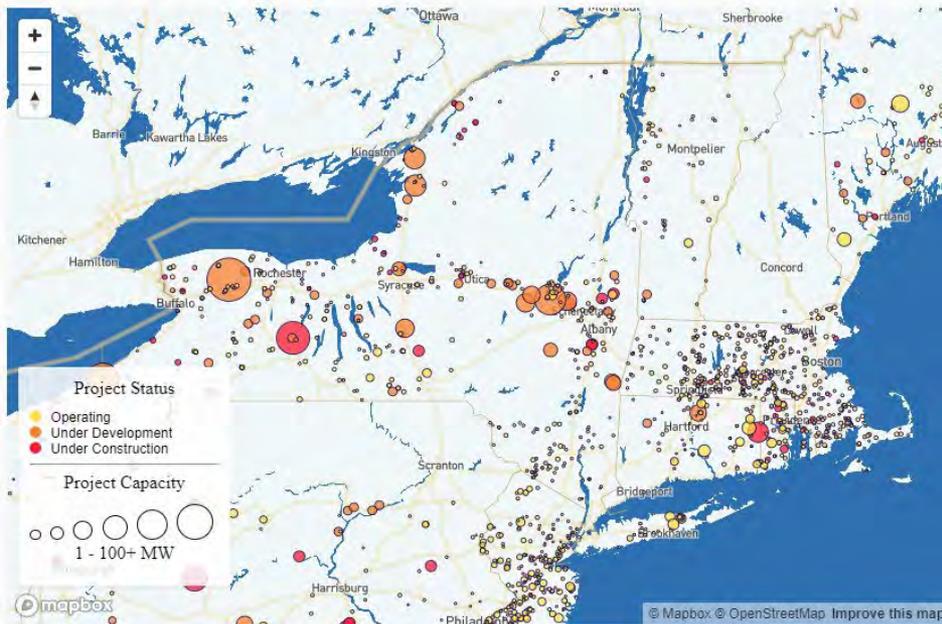
Solar Development in Farm Communities

New York's Farmland



Project Location Map

See the locations of the major solar systems identified by this research on our interactive map.





AFT Smart SolarSM Principles (2023)

1. Prioritize Solar Siting on Buildings and Land Not Well Suited for Farming

Emphasize solar energy development on rooftops, carports, irrigation ditches, brownfields or other land not well suited for agriculture to help **minimize the impacts** of solar energy on our nation's best agricultural land and farm businesses.

2. Safeguard the Ability for Land to Be Used for Agriculture

If solar energy is developed on farmland or ranchland, policies and practices should **protect soil health**, especially during construction and decommissioning, to ensure opportunities for farming in the future.

3. Grow Agrivoltaics for Agricultural Production & Solar Energy

Agriculture and solar energy can coexist if appropriate planning is undertaken.

Agrivoltaics projects sustain agricultural production underneath solar panels and/or between rows of solar panels throughout the life of the project.

4. Promote Equity and Farm Viability

Farmers and underserved communities should benefit from solar energy development. There must be **inclusive stakeholder engagement** to ensure projects **strengthen farm viability** and **reflect farmer interests**, including underserved producers that face barriers to accessing land and other resources.



What is Agrivoltaics?



Agrivoltaics

Agrivoltaics is the integration of agricultural or horticultural production and solar on a single parcel. Agrivoltaic projects are designed to provide appropriate spacing and height to allow for continued or renewed agricultural activity either around, between, or under the panels.



*Jack's Solar Garden,
CO with Sprout City
Farm Workers*

AFT on Agrivoltaics

Smart Solar on New York Farmland Report (2022)

Agrivoltaics projects sustain agricultural production underneath solar panels and/or between rows of solar panels throughout the life of the project.

- **Intentional Design & Functional** for Farming
- **Farmer Centric, Soil Health** Focused
- **Compliance: Flexibility with Rigor**
- **Pollinator habitat** - good conservation practice and should be industry standard. However, planting for pollinators is not considered “agrivoltaics”. Sheep is not either when only function is for maintaining vegetation.



What is the difference?

Traditional utility-scale configurations

Crop Production



Crops grown in between rows

Animal Husbandry



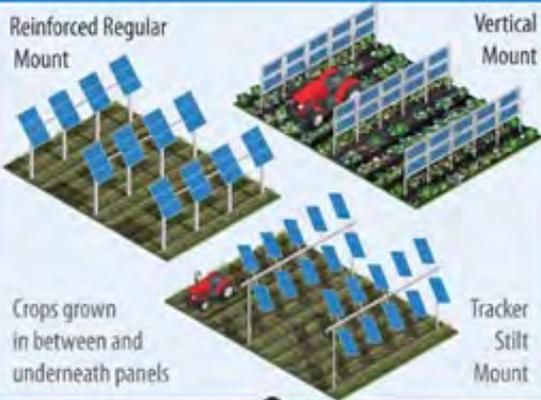
Grazing in between and underneath panels

Ecosystem Services



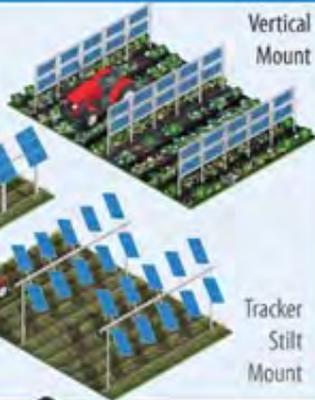
Vegetation grown in between and underneath panels

Reinforced Regular Mount



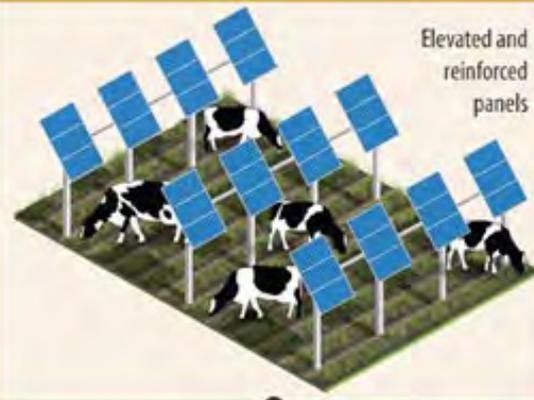
Crops grown in between and underneath panels

Vertical Mount



Tracker Stilt Mount

Elevated and reinforced panels



Greenhouse Solar



Alternative configurations



SCAPES

Sustainably Co-locating Agricultural and Photovoltaic Electricity Systems

Funded by
USDA National Institute of Food and Agriculture

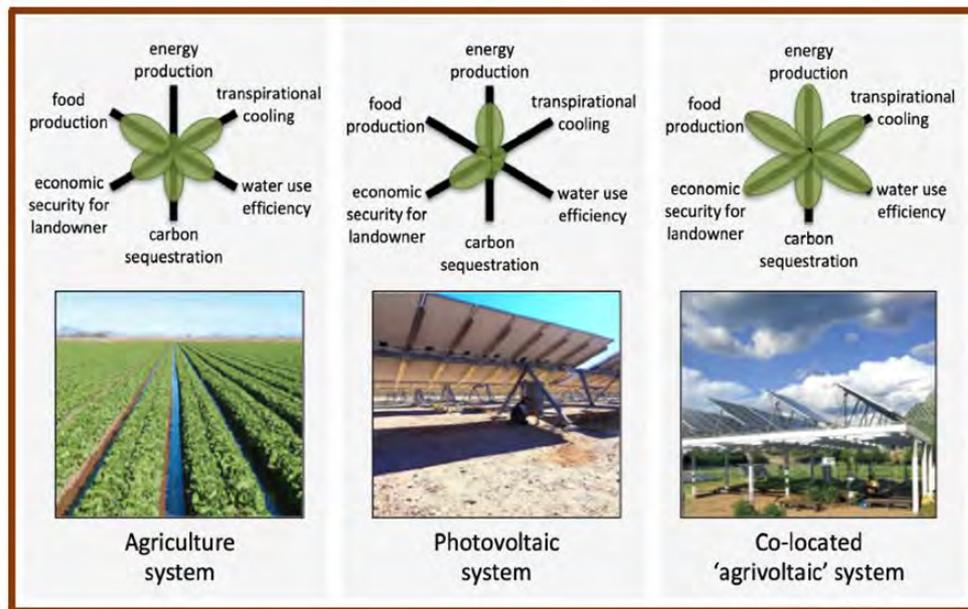


We need to continue to evolve our thinking to acknowledge that agrivoltaics is a 'system' of systems

We can optimize systems!

...but we have to acknowledge that we are making trade-offs and understand the drivers and levers and knobs

- Ag systems can be optimized for production or water or land conservation...
- PV systems can be optimized to meet regional demands...
- But truly 'optimizing' this system requires an understanding of goals and measures of costs and benefits



Research

Research happening on spacing,
configuration, height, crops, animals

NY: Cornell – apples and grapes

NJ: Rutgers DOE grant – crops and grazing

MA: Crops and grazing

Europe: Variety of crops, grazing and Orchards

Policies and Incentives

Dual Use / Agrivoltaics Incentives – Developers need incentives to design solar projects this way because it costs more to elevate panels and less energy produced/acre with greater spacing. Need incentives to be more competitive.

Conservation community and others need to be normalizing agrivoltaics and helping educate farmers, communities, legislators about the benefits.

See what other states/countries are doing – what is working?

NY is working against itself in some regards – NYSDAM and clean energy goals – need to support alignment that supports conservation and renewable energy. ie: FPIG program allowing agrivoltaics in easements.

New York

S8889A (21-22) signed by Governor – Agricultural & Farmland Viability Protection Fund

S7861A (21-22) signed by Governor– Agrivoltaics Guidance and Education Materials

S1058 (23-24 session) in Senate Ag Committee – Ag Assessment for Dual Use

A2888 (23-24 session) in Assembly Ways and Means – Clean Energy Outreach and Community Planning

Massachusetts

80 MW under MA SMART - est. 2018, updated 2022

Shading and panel height requirements, state-approved farm plans

Generous adder (\$0.06 kWh) but challenging qualification process

New Jersey

200 MW program in development - expected in 2023

Up to 10 MW, projects on prime farmland in ADA's require approved research

Illinois

Community Solar – preference point (2022 LT Renewables Procurement Plan)

Policies under consideration

CO, ME, MD, NY

What Can You Do?

- **Help local communities understand what is at stake, and how farming and solar can be part of the solution... together, through trainings with CCL**
- **Clarify farmland is important to our communities.** Agrivoltaics can be helpful for soil health, farm viability
- **Amplify how agrivoltaics**, especially solar that works with a diversity of farming practices, is possible
- **Support policies and funding** that would increase the pace of agrivoltaic research and demonstration projects
- **Support policies** that will allow for agrivoltaics to become more mainstream
- <https://community-consultants.com/>

Questions?



Saving the Land that Sustains Us