Agrivoltaics: Co-Locating Solar and Agriculture

Solar array, photo courtesy Lewis County Planning Dept.

Katie Malinowski

Executive Director

Angie Kimball

Circuit Rider

Tug Hill Region
Facts and Figures

- 2,100 square miles, or 1.2 million acres
- 41 towns containing 18 villages
- 104,000 residents, 50 people per square mile

Renewables in New York State

Climate Leadership and Community Protection Act (CLCPA), 2019

Increased the Renewable Energy Standard to 70% by 2030; Double the target for distributed solar power to 6 gigawatts by 2025 and 10 gigawatts by 2030; Install 1.5 gigawatts of statewide energy storage capacity by 2025 and 6 gigawatts by 2030.

Accelerated Renewable Energy Growth and Community Protection Act (FY2020-21 NYS budget)

Added Section 94-c to NYS Executive Law, created Office of Renewable Energy Siting

Planning for Solar Energy Projects 2023

Renewables in New York State

Renewable Action through Project Interconnection and Deployment (RAPID) Act – Public Service Law Article 8 (2024)

Consolidates the environmental review, permitting, and siting of major renewable energy facilities and major electric transmission facilities under the purview of the Office of Renewable Energy Siting and Electric Transmission (ORES).

Projects 25 MW or later go through this process

Currently undergoing rulemaking, comments due by March 18, 2025

… the Office may elect to not apply local substantive requirements if it finds that, as applied to the facility, such requirements are unreasonably burdensome in view of the CLCPA targets and environmental benefits of the facility. For each local substantive requirement identified by the applicant, a statement justifying the request shall be provided. The statement of justification shall show with facts and analysis the degree of burden caused by the requirement, why the burden should not reasonably be borne by the applicant, that the request cannot reasonably be obviated by design changes to the facility, that the request is the minimum necessary, and that the

Renewables in New York State

Section 138(4) The uniform standards and conditions established pursuant to this section shall be designed to avoid, minimize, or mitigate to the maximum extent practicable, potential significant adverse impacts to land used in agricultural production, with additional consideration for land within an agricultural district or land that contains mineral soil groups 1-4. The provisions of this subdivision shall not apply in the consideration of any permits for siting, design, construction, or operation of a major renewable energy facility for which a completed application has been received by the office of renewable energy siting and electric transmissions prior to the adoption of amended uniform standards and conditions consistent with this subdivision.

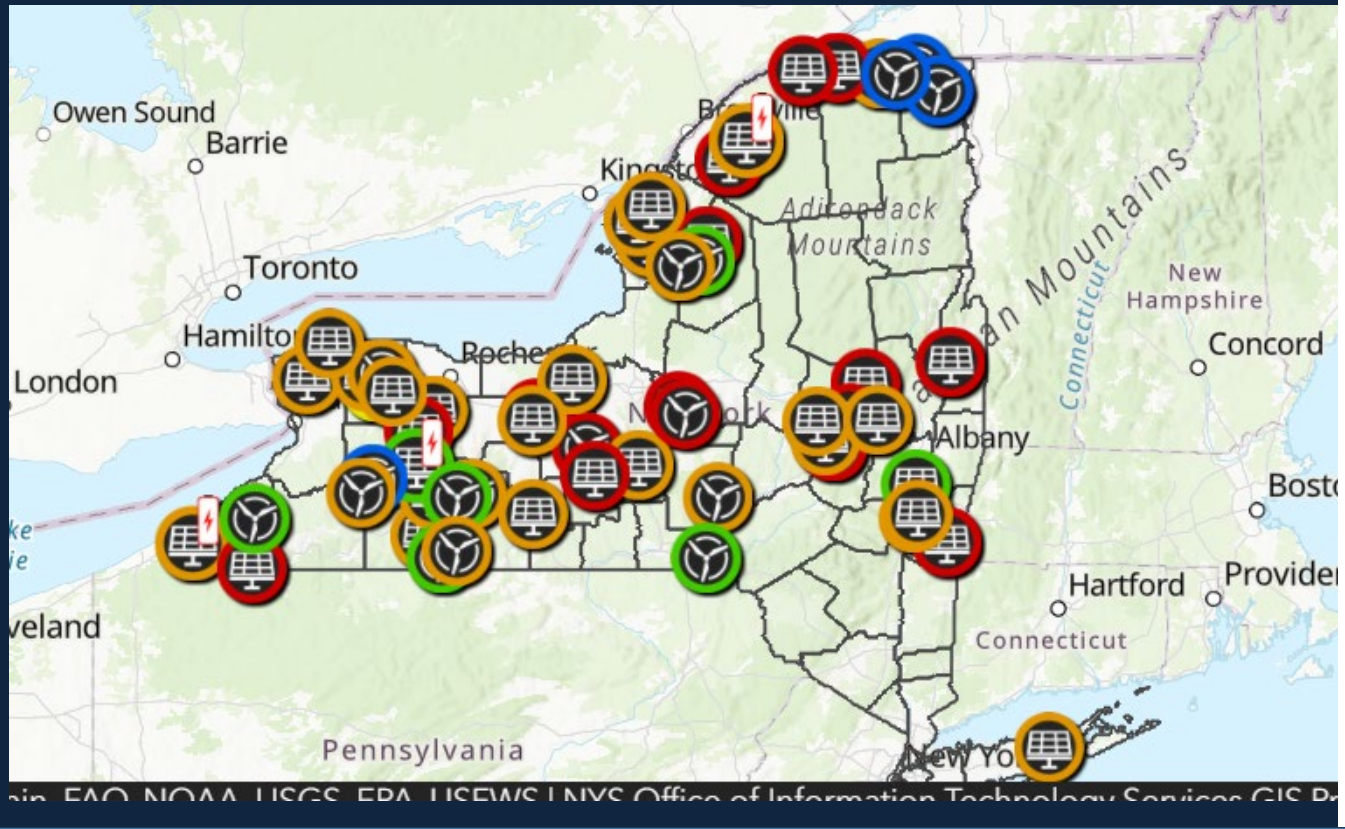
Renewables in New York State

- § 147. Farmland protection working group. 1. There is hereby created in the executive department a farmland protection working group consisting of appropriate stakeholders….

- 2. The working group shall, no later than one year after the effective date of this article, recommend strategies to encourage and facilitate input from municipalities in the siting process of major renewable energy facilities and major electric transmission facilities and to develop recommendations that include approaches to recognize the value of viable agricultural land and methods to minimize adverse impacts to any such land resulting from the siting of major renewable energy facilities and major electric transmission facilities.

ORES PROJECT MAP

(https://www.arcgis.com/apps/dashboards/4841a0a133524fceb6ff1ca0d8dcaf06)



Project Locations

- Solar - Notice Of Intent
- Solar - Application
- Solar - Permitted
- Solar - Under Construction
- Solar - Operational
- Wind - Notice Of Intent
- Wind - Application
- Wind - Permitted
- Wind - Under Construction
- Wind - Operational
- Solar + Storage - Notice Of Intent
- Solar + Storage - Application
- Solar + Storage - Permitted

https://climate.ny.gov/dashboard

Overview of Progress | Climate Act Metrics

New York State's Climate Act is among the most ambitious climate laws in the nation, requiring that the State reach a multitude of quantifiable, time-based clean energy goals.

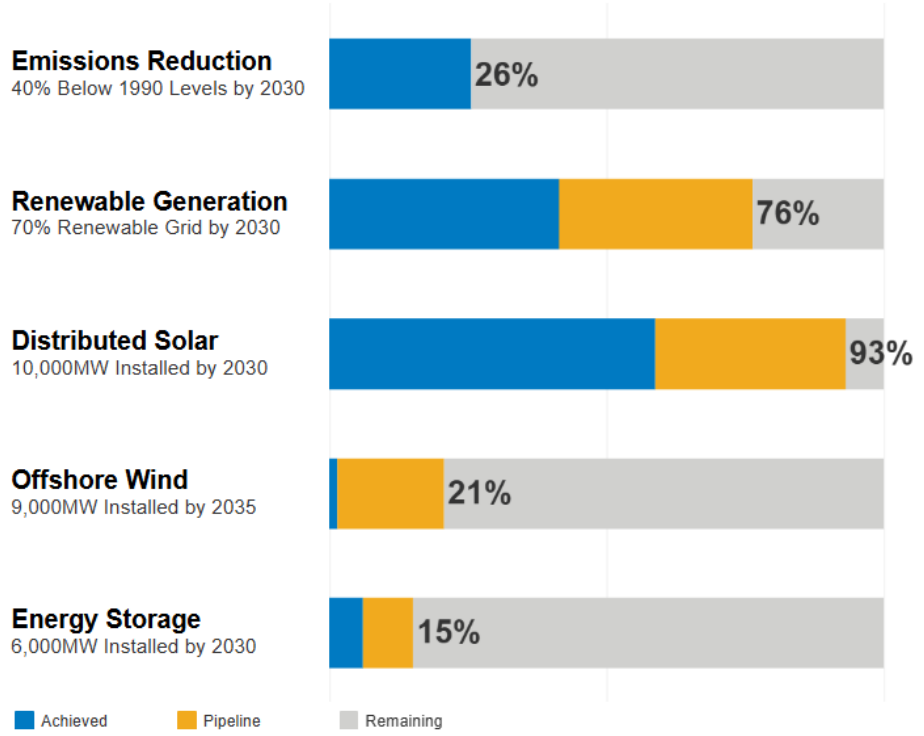
This "Climate Act Dashboard" is designed to keep New Yorkers apprised of the State's progress toward meeting those Climate Act goals. To complement the dashboard, a series of interactive stories takes the reader on a journey to discover more about the clean energy economy and how each goal addresses a critical element of the fight against climate change. Explore more with "See the Story" links in each section.

Navigating the Dashboard

Throughout the dashboard, small blue "info" buttons provide additional context simply by hovering over them. Data used to generate visuals can be downloaded where noted with a "download the data" button. A review of each goal introduction will provide more information on data sources as well as the timing of data updates.

Metrics in each section of the dashboard are updated periodically throughout the year and metrics will be added in the future to report on energy efficiency savings and disadvantaged community investment. Total Progress, often depicted throughout the dashboard as a % of progress toward goals, is represented by the sum of Achieved and Pipeline values.

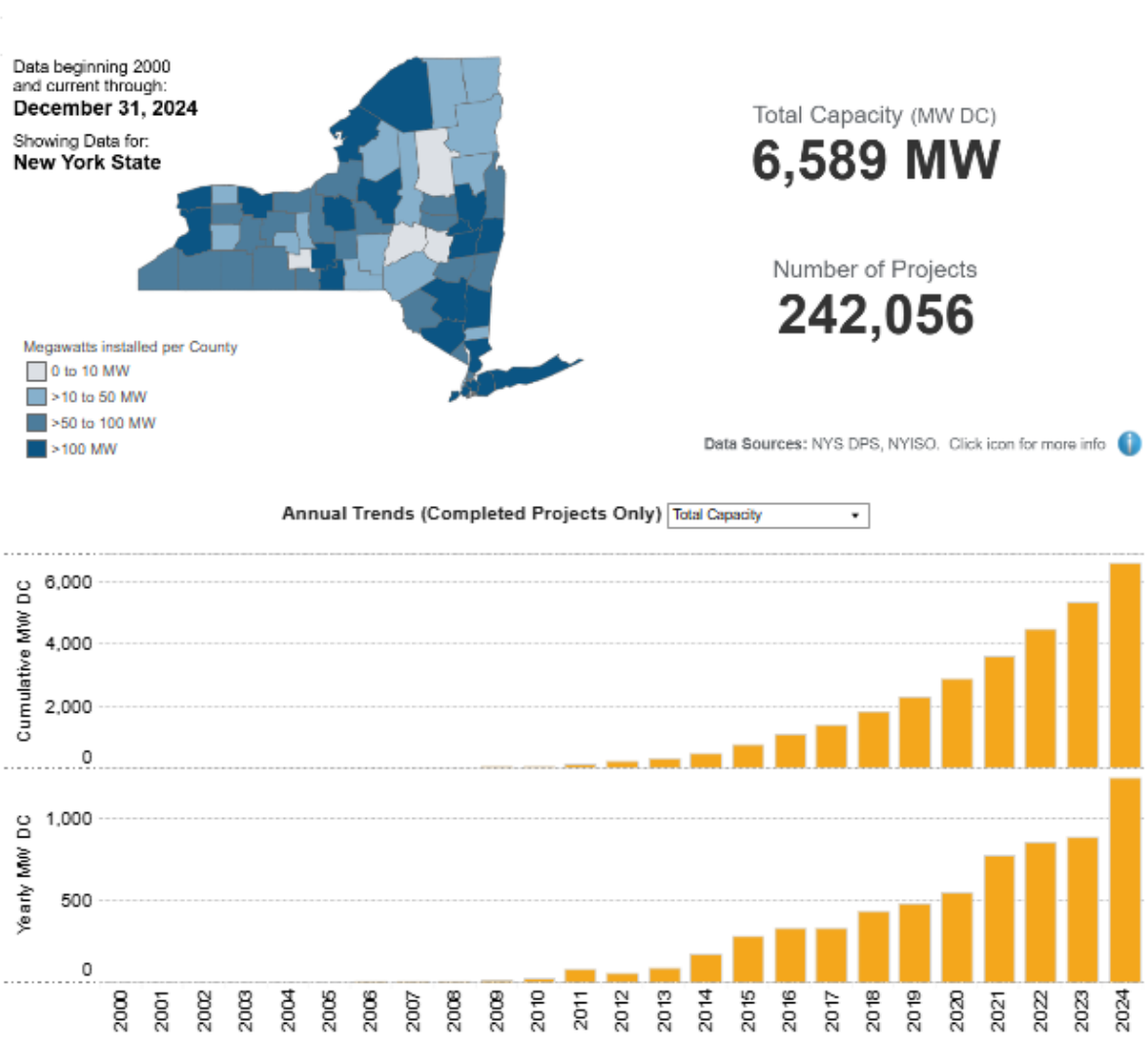
Questions or comments on the dashboard can be sent here.



THE BUILDOUT SO FAR - DISTRIBUTED

STATEWIDE

https://www.nyserda.ny.gov/All-Programs/NY-Sun/Solar-Data-Maps/Statewide-Distributed-Solar-Projects



WHAT CAN MUNICIPALITIES DO TO MANAGE?

(from a land use perspective?)

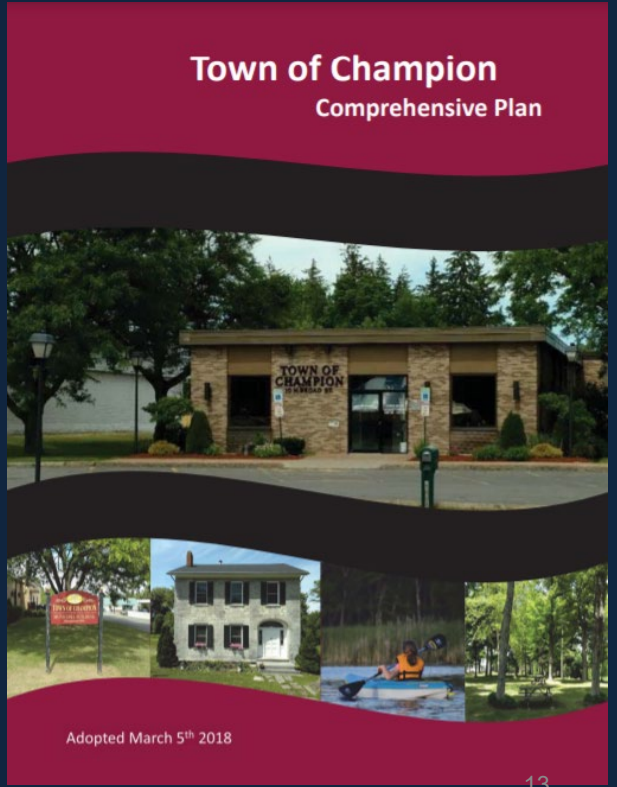
- MORATORIA
- COMPREHENSIVE PLANS
- ZONING
  - Site plan review
  - Special use permit review

MORATORIA

- Adopted as local law
- Prohibits development of certain defined land use projects for a set period of time
- Six months is common

COMPREHENSIVE PLANS

- The materials, written and/or graphic, including but not limited to maps, charts, studies, resolutions, reports and other descriptive material that identify the *goals, objectives, principles, guidelines, policies, standards, devices and instruments* for the immediate and long-range protection, enhancement, growth and development of the municipality.



ZONING

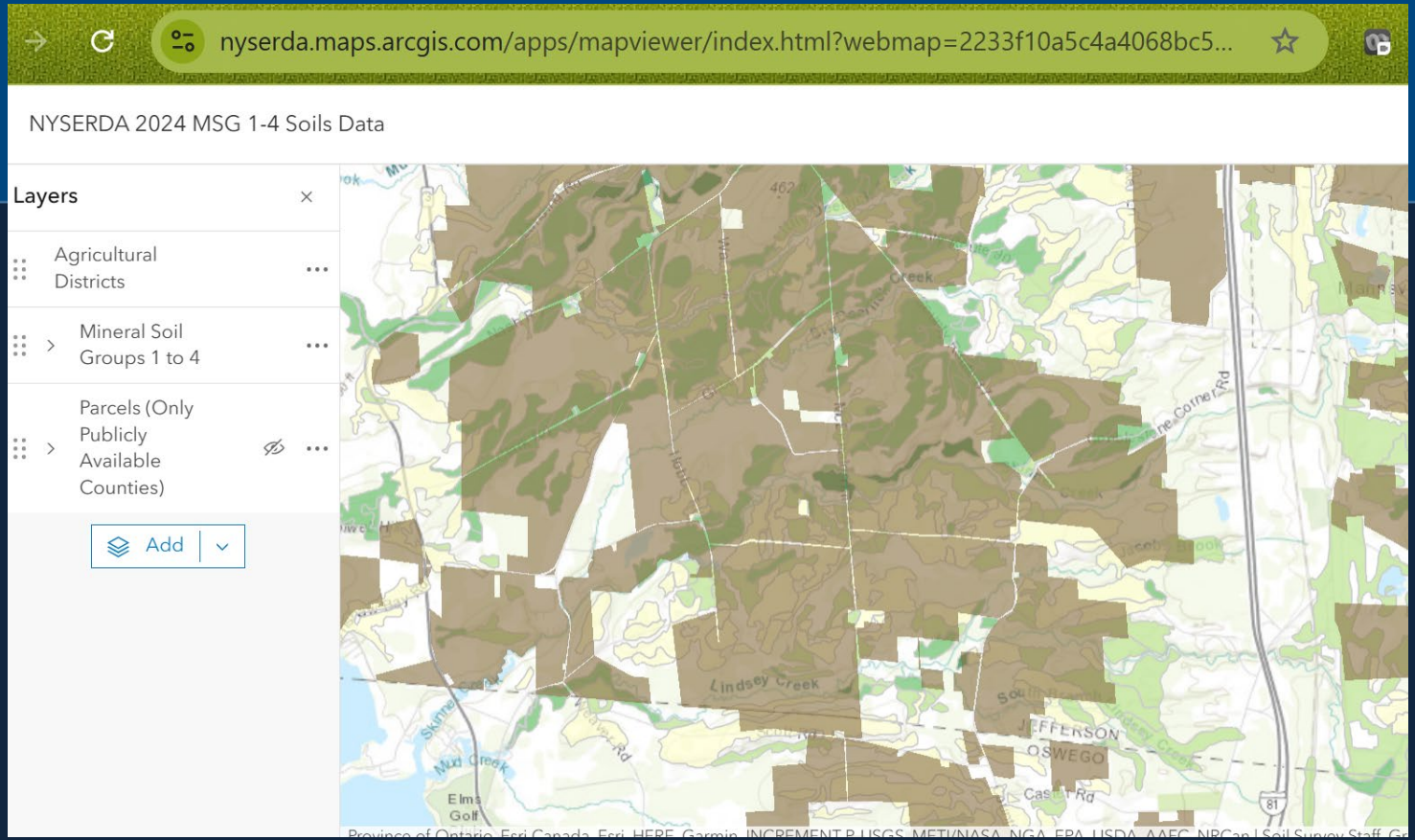
- Protect public health, safety, and welfare
- Regulate use, density, placement of structures on lots
- In NYS, zoning is administered by local governments – towns, villages, and cities – **NO COUNTY ZONING**

PROTECTIONS FOR AG RESOURCES

- Solar Energy Systems shall occupy no more than [50] % of the area of MSG 1-4 soils within the Facility Area

- Solar Energy Systems may exceed 50% of MSG 1-4 soils if land can still be used as Farm Operation

- To the maximum extent practicable, Solar Energy Systems located on MSG 1-4 soils shall be constructed in accordance with the construction requirements of the New York State Department of Agriculture and Markets Guidelines for Solar Energy Projects – Construction Mitigation for Agricultural Lands

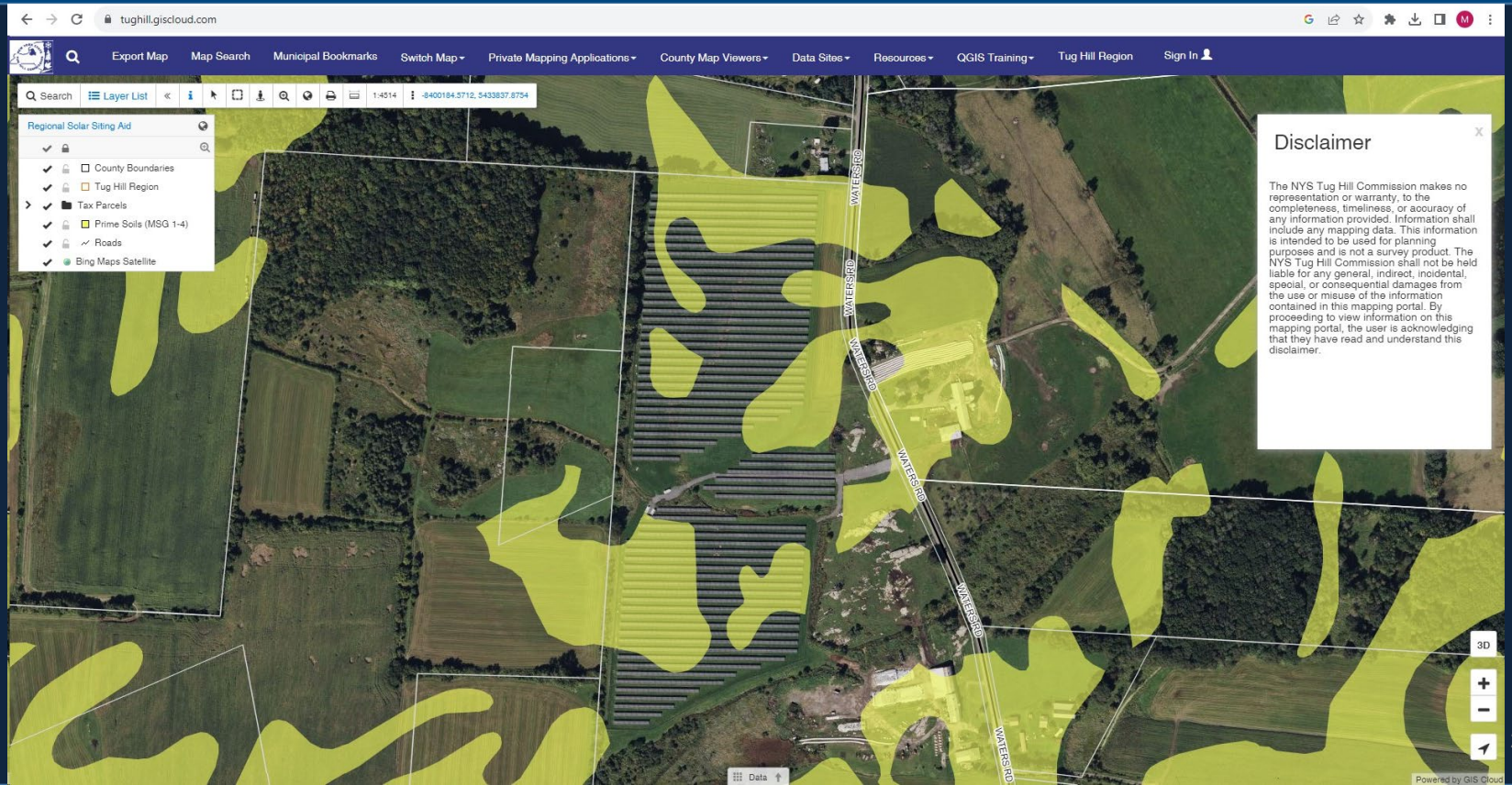


Google: nys dept of agriculture and markets soil groups

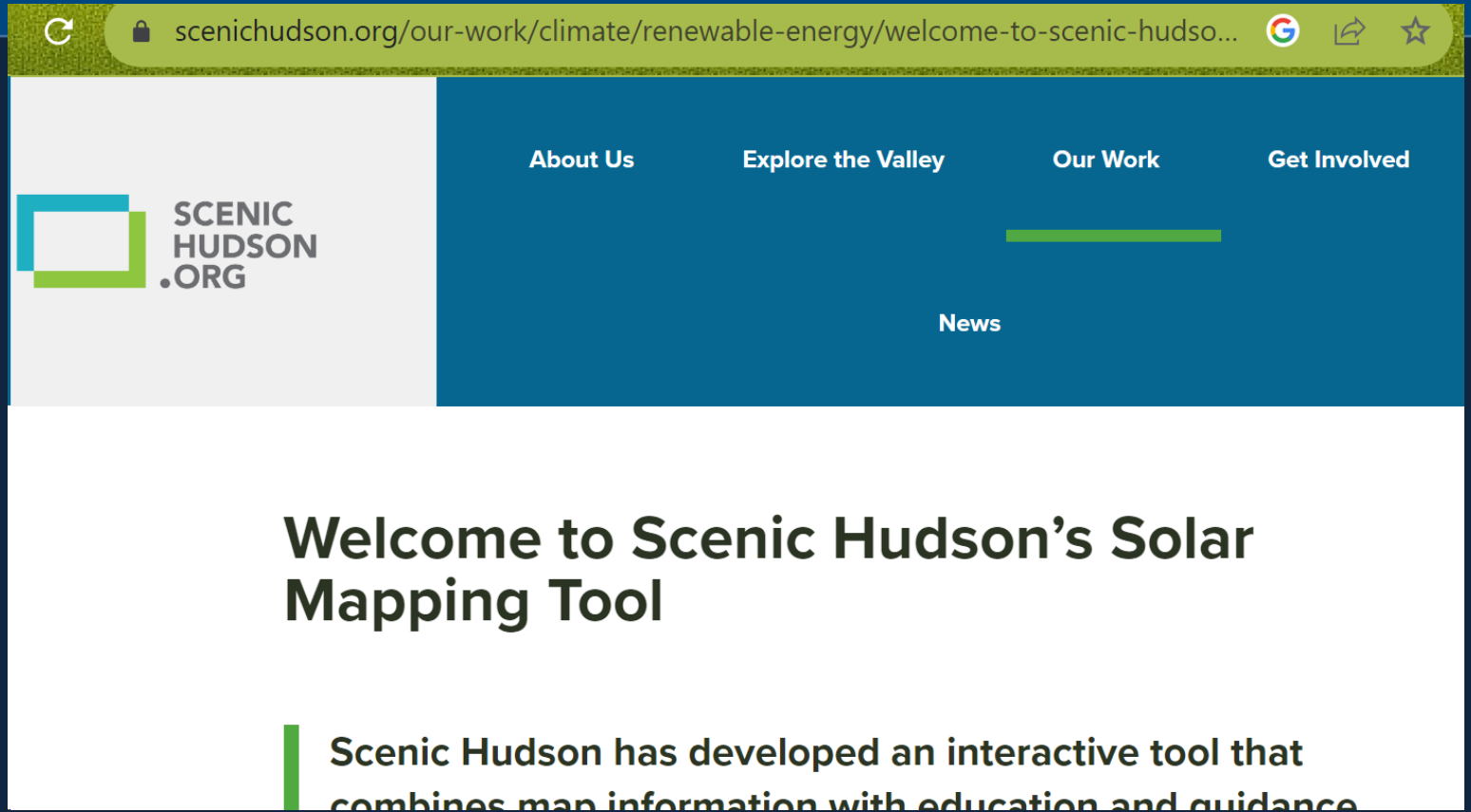
Also see: https://websoilsurvey.sc.egov.usda.gov/

PRIME SOILS MAP AS A RESOURCE FOR OUR COMMUNITIES

www.tughill.giscloud.com



SCENIC HUDSON SOLAR MAPPING TOOL

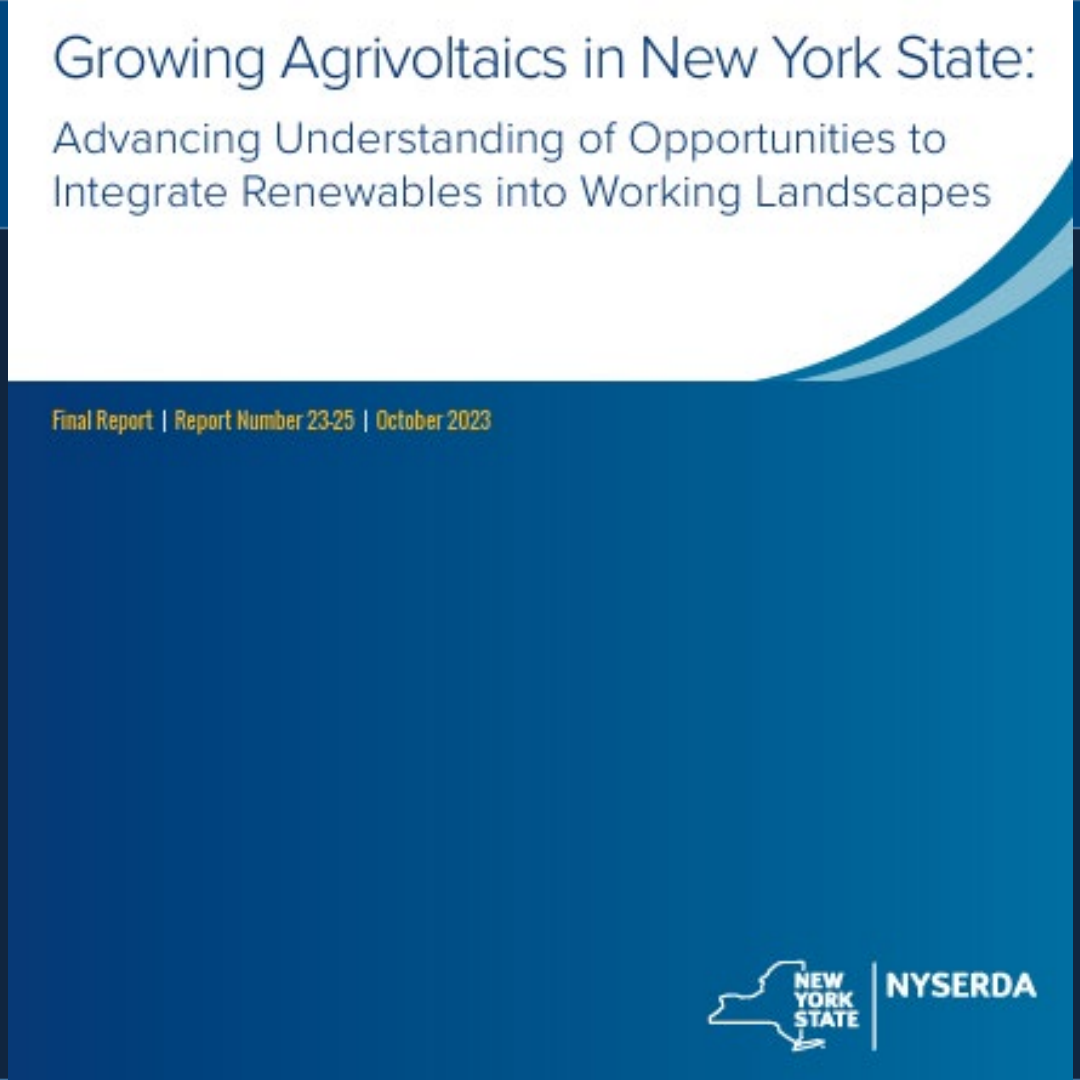


AG & MARKETS REVIEW

Projects that will receive a subsidy from a New York State funding agency in an agricultural district trigger a consultation from the NYS Department of Agriculture and Markets.

EXAMPLES OF ZONING WAIVERS GRANTED BY ORES

- Decommissioning bonds that have an annual inflation escalator built in
- Some noise limits
- Some requirements for permeable access roads (i.e. no pavement)
- Prohibition of siting on any amount of prime farmland
- Requirements that components below 4 feet be removed
- Large setbacks from wetlands
- 500-foot setbacks from property lines
- 40% maximum lot coverage
- 15% of lot maximum vegetation clearing



Focus Areas

- Dairy
- Sheep
- Specialty Crops

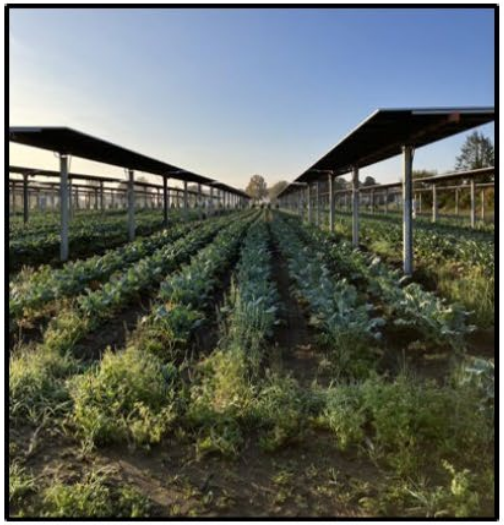
The New York State Agricultural Technical Working Group (A-TWG) is an independent advisory body to the State of New York and other participating entities to steer efforts in advancing renewable (primarily solar) energy development across scales in a responsible way that supports New York State's agricultural operations, lands, farmers, and communities. It is comprised of agricultural land and farmer advocates, solar developers and operators, non-governmental organizations that focus on clean energy, climate, and environmental protection, local government officials, academic experts, and state agencies.

https://www.nyatwg.com/

Farmer-First Solar: What is Agrivoltaics?

NYSERDA/NYSDAM: The simultaneous use of land for solar photovoltaic power generation and agricultural production of "crops, livestock and livestock products," as defined by NYS Agriculture and Markets Law (AML) Sec 310(2).

Pollinator habitat by itself is not "agrivoltaics" per NYS Ag and Markets Law



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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 a variety of farming practices and products (farm viability)
- **Farmer Centric, Soil Health, Water Management Focused**
- **Light penetration vs shade**
- **On-farm benefits: Flexibility with Rigor**

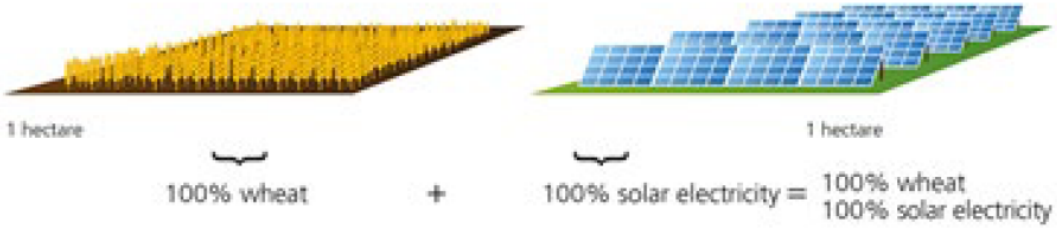
NREL

Jack's Solar Garden

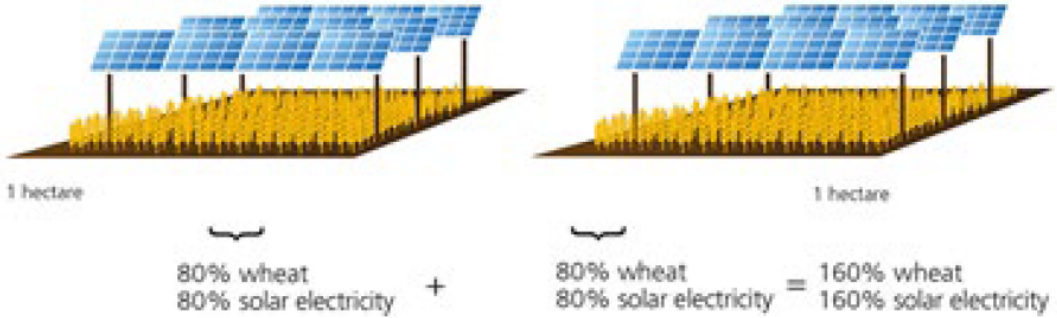
American Farmland Trust

Solar Designs Matter

Separate Land Use on 2 Hectare Cropland



Combined Land Use on 2 Hectare Cropland: Efficiency increases over 60%



Fraunhofer Institute

Concept:
Research is showing that agrivoltaics can allow for land to generate more revenue with a combined crop of plants and energy.

Somewhat less energy produced.
Somewhat less crop produced.

Total “crop” greater than either of the two crops (solar or food).

American Farmland Trust

Communities Can Plan for Solar and Agriculture

- The concept needs to be socialized – change our way of thinking so at the minimum it is an option on the table.
- Not either solar or agriculture, but solar and agriculture
- Incorporate agrivoltaics into solar laws – ORES looks at local laws and is not seeing agrivoltaics
- Incentivizing at a state and local level – NY considering a pilot agrivoltaics research project to determine how much additional funds per megawatt (adder) would work to incentivize developers

NYSERDA Model Solar Law

Some Unintended Consequences of Local Laws

Hyperion, LLC

- Height requirements may prevent agrivoltaics
- Buffers/setbacks may reduce amount of Solar, make project impossible
- Raised panels may not need fencing
- By requiring it stays off good farmland may reduce farm viability
- Making laws too restrictive – considered unreasonable and are discounted

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Example in Northern NY

ClearPath Energy

- New Breman
- 50 acres
- 64 foot spacing
- 8 foot to racking
- Haying operation

- More Being Developed in Utica area, Central NY and Hudson Valley

- www.clearpath.energy

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Berry Farm – J. Anderson

AFT Smart Solar Siting Principles

1. Prioritize solar siting on the built environment and land not well suited for farming. Concentrate solar development on rooftops, irrigation ditches, brownfields, and marginal lands.
2. Safeguard the ability for land to be used for agriculture. Policies and practices should protect soil health and productivity, especially during construction and decommissioning.
3. Grow agrivoltaics for agricultural production and solar energy. Agrivoltaic projects allow for farming underneath and/or between rows of solar panels throughout the life of the project.
4. Promote equity and farm viability. Require inclusive stakeholder engagement, including farmers and underserved communities, to ensure widespread benefits from solar energy development.

WWW.FARMLAND.ORG/NYAGPVROUND

American Farmland Trust (AFT) and Tug Hill Commission (THC) are working together to host a series of roundtables in upstate New York to discuss agrivoltaics—a practice that integrates solar energy development and farming on the same piece of land.

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JOIN US FOR AN UPCOMING EVENT

1. **WEDNESDAY, FEB 26, 2025, 6-8 P.M**
   CCE of Oneida County, 121 2nd St, Oriskany, NY 13424
2. **THURSDAY, FEB 27, 2025, 6-8 P.M.**
   CiTi BOCES, 179 County Route 64, Mexico, NY 13114
3. **WEDNESDAY, MAR 26, 2025, 6-8 P.M.**
   Howard G. Sackett Technical Center, 5836 NY-12, Glenfield, NY 13343
4. **THURSDAY, MAR 27, 2025, 6-8 P.M.**
   CCE of Jefferson County, 203 N Hamilton St, Watertown, NY 13601

Questions?

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