NEW YORK STATE | NYSERDA
New York State Energy Research and Development Authority

OVERVIEW OF THE UPDATES TO THE SOLAR GUIDEBOOK

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Thursday April 16, 2026

Introduction

Clean Energy Siting Team

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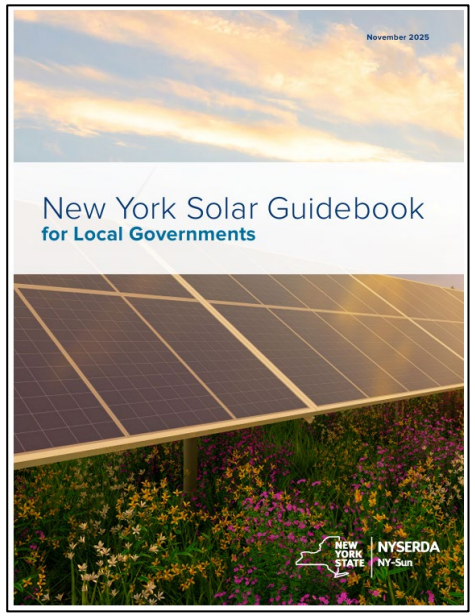
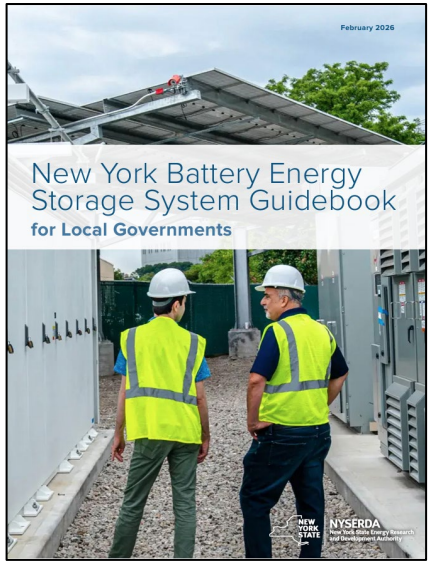
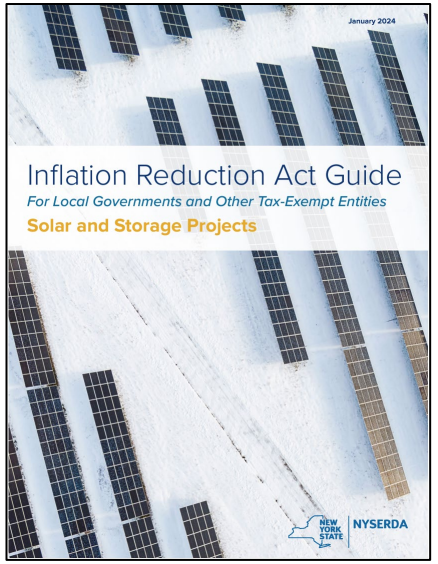
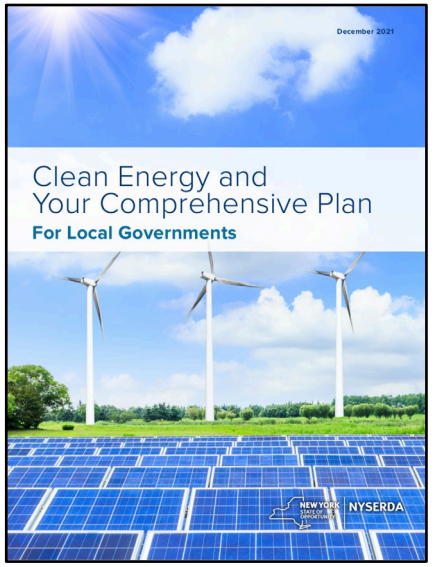
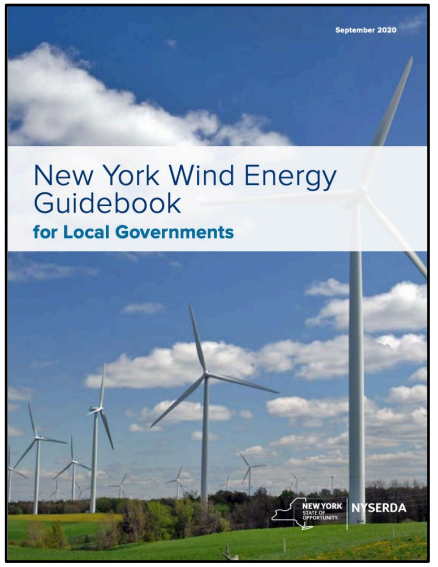






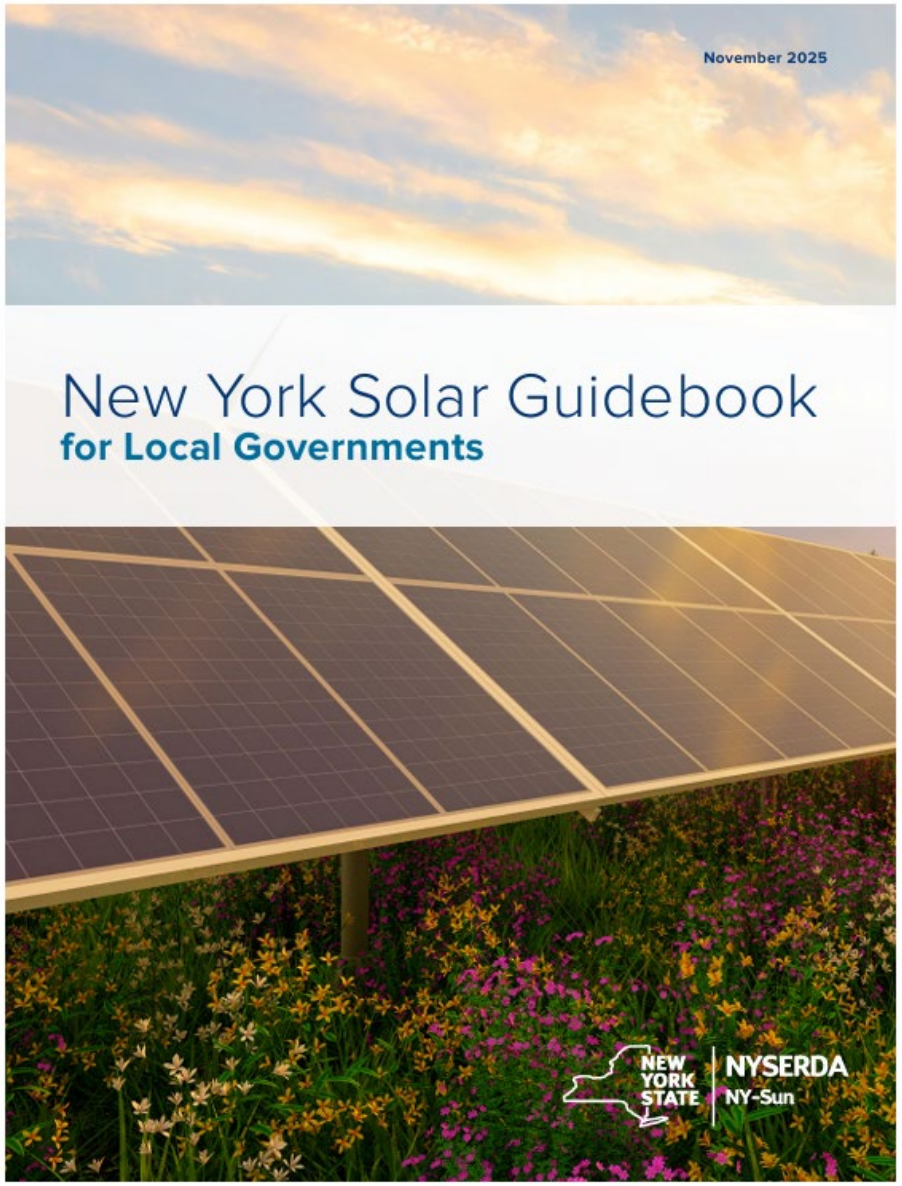




Primary Land Use & Local Considerations:

- Interconnection
- Appropriate location/zoning
- Bulk/area standards
- Environment
- Visual/aesthetic
- Agricultural land
- Decommissioning
- Taxation

Solar Guidebook for Local Governments



- Section 1: Acronyms
- Section 2: Solar Basics and FAQ
- Section 3: Landowner Considerations
- Section 4: Solar Installations on Agricultural Lands
- Section 5: State Environmental Quality Review (SEQR) for Solar
- Section 6: New York State's Real Property Tax Law § 487 and Solar Payment-In-Lieu-Of-Taxes (PILOT)
- Section 7: Decommissioning Solar Panel Systems
- Section 8: Model Solar Energy Local Law
- Section 9: Municipal Solar Procurement Toolkit
- Section 10: Solar PV – Permitting and Inspecting
- Section 11: Roof Top Access and Ventilation

Section 2

Solar Basics and Frequently-Asked-Questions

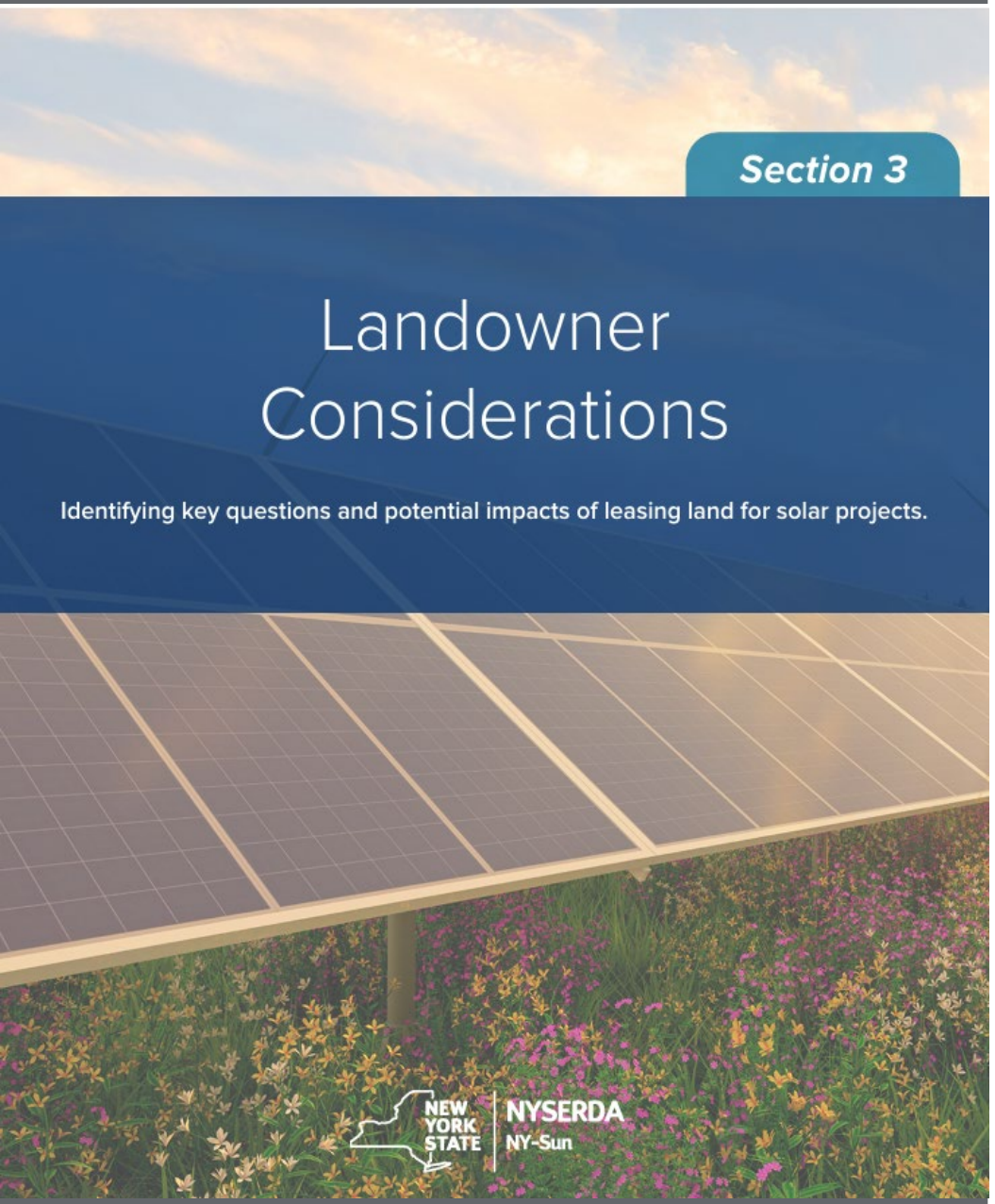
Understanding the basics of solar energy technology, equipment, and terminology.

Shedding Light on Solar Energy Efficiency

Imagine your solar panel as a gigantic lightbulb, illuminating your home with clean, renewable energy. But just as not all lightbulbs shine at full brightness all the time, solar panels don't operate at maximum capacity around the clock. To demystify this concept, let's draw a parallel between your solar panel and a 60W lightbulb.

Capacity Factor: A Watt-Hour Tale

When we talk about a solar panel's capacity factor, we're essentially measuring how effectively it harnesses sunlight throughout the day. It's analogous to how efficiently a lightbulb uses electricity. To illustrate this, consider a 60W lightbulb turned on for one hour. In that time, it consumes 60 watt-hours (Wh) of electricity. If this same lightbulb were to run continuously for 24 hours, it would consume a total of 1,440Wh. Now, think of the capacity factor as a percentage. For the lightbulb that's only on for one hour a day, its capacity factor can be viewed as 4.2%. This percentage reflects how often it's operating at full blast compared to its maximum potential.



Landowner Considerations

Section 1: Solar for your Land

Section 2: Solar Lease Phases and Considerations*

Section 3: Easements and Rights-of-Ways (ROW)

Section 4: Typical Solar Payment Structure

Section 5: Agricultural Assessments

Section 6: Agrivoltaics Considerations*

Section 7: Other Considerations

Section 2. Solar Lease Phases and Considerations

- Detail out the steps of solar lease and include notes to include agrivoltaics as a part of that discussions during all of the phases of the project
  - Letter of Intent
  - Option to Lease Agreement
    - Due Diligence
  - Solar Lease Agreement
    - Construction
    - Operation
    - Decommissioning

Due diligence is a process whereby the developer assesses whether or not the property is technically and financially appropriate for the installation of a solar facility.

Section 6. Agrivoltaics Considerations

- **Section 6.1:** Lease Agreement & Insurance Requirements
- Site visits protocol
  - Contact / notification info
  - Safety
  - Unplanned visits
- Insurance
  - Require for each party and various considerations for each
  - References the Mount Morris Agrivoltaics Study estimates

Section 6. Agrivoltaics Considerations

- **Section 6.2**: Parcel Evaluation
- Review municipal zoning codes
  - Possibility of less stringent zoning standards
- Environmental factors
  - Wetlands & waterbodies
  - MSG 1 - 4

Section 6. Agrivoltaics Considerations

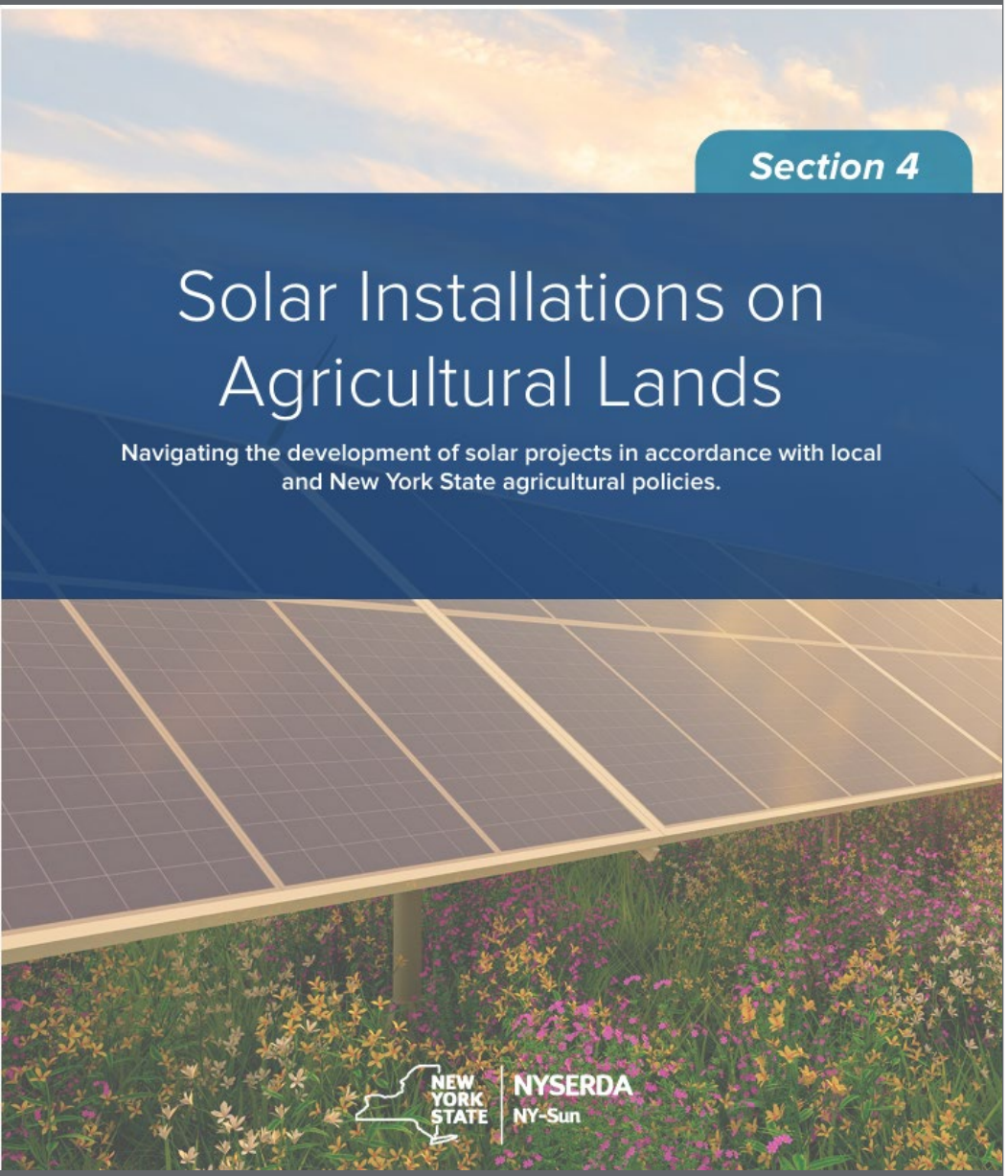
- **Section 6.3**: Solar Facility Design & Construction
  - Cable location and depth
  - Panel height, width, turning clearances
  - Stormwater (compaction, grading)
  - Fencing (type, location, height, wildlife friendly)
  - *Considerations for "Grazing-Ready" Solar Facilities: Planning for Integration of Sheep*
- **Section 6.4**: Post Construction
  - Site access protocols and all site-specific safety precautions
  - Sustainable weed and pest management strategies

Section 6. Agrivoltaics Considerations

- **Section 6.5**: Economic Considerations
- Determine what agricultural expenses can be subsidized, such as seeds or livestock
- Determine what solar O&M expenses can be offset if grazing is used
- Reference 2019 Cornell University study related to income
  - Net income solar sheep grazers in NYS vs broader eastern U.S.

Section 6. Agrivoltaics Considerations

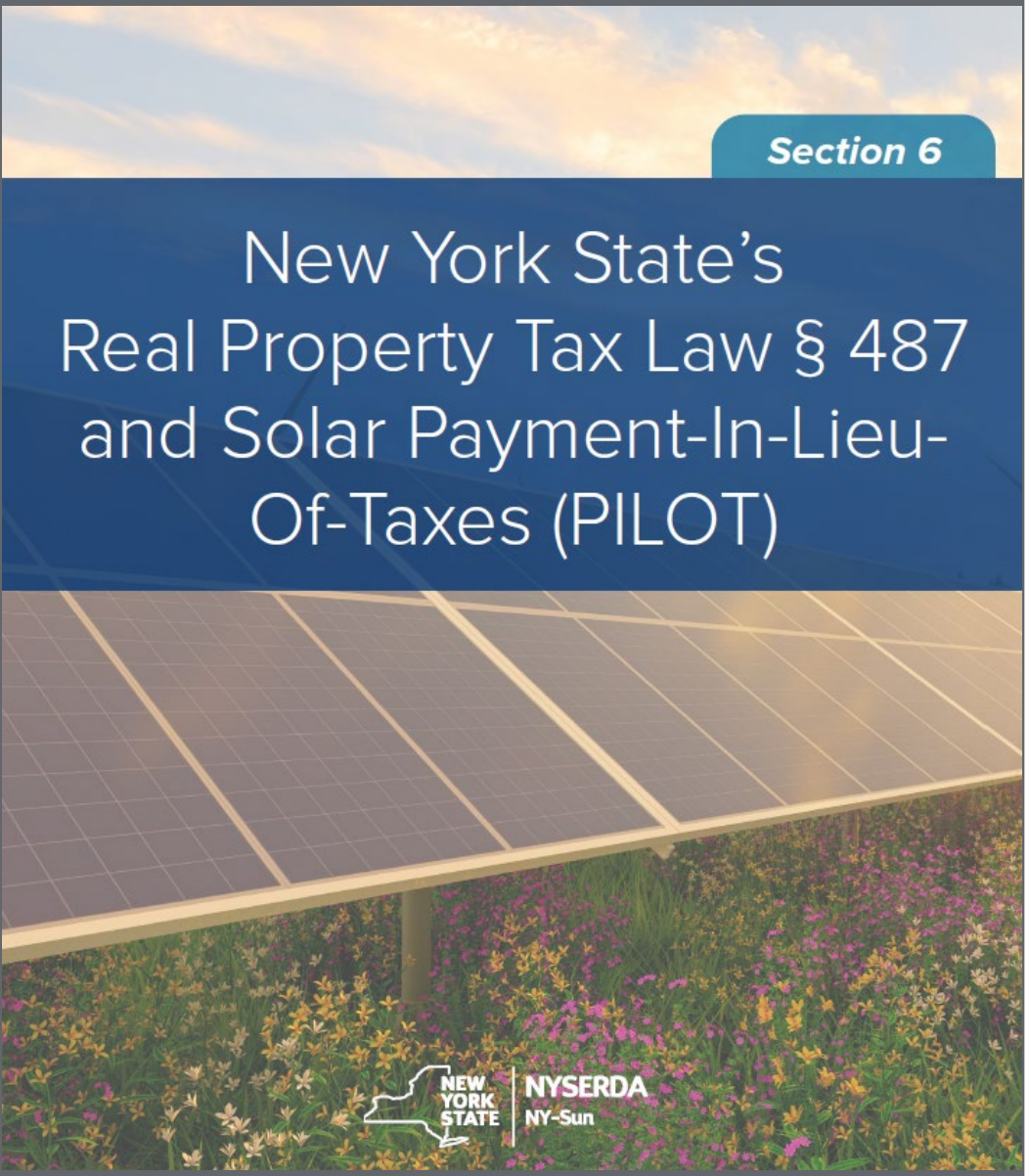
- **Section 6.6**: Agrivoltaic Activities
- Crop Production
  - Consider plant requirements (shading, water, max height) and system design (leading edge, turn radius, tracking coordination)
  - Topography
- Bee Keeping
  - Plant selection/ maintenance and apiaries placement
  - ORES' projects and NYS Dept of Ag and Markets
- Animal Agriculture
  - Grazing Plan and Checklist
  - Field equipment and site design



Solar Installation on Agricultural lands

Section 4. Solar Installations on Agricultural Lands

- Updated definition of agrivoltaics
  - Removal of dual use as the key phrase
- Introduction to the A-TWG
- Added a reference to *Considerations for "Grazing-Ready" Solar Facilities: Planning for Integration of Sheep*
- Updated information about ORES and agriculture regulations

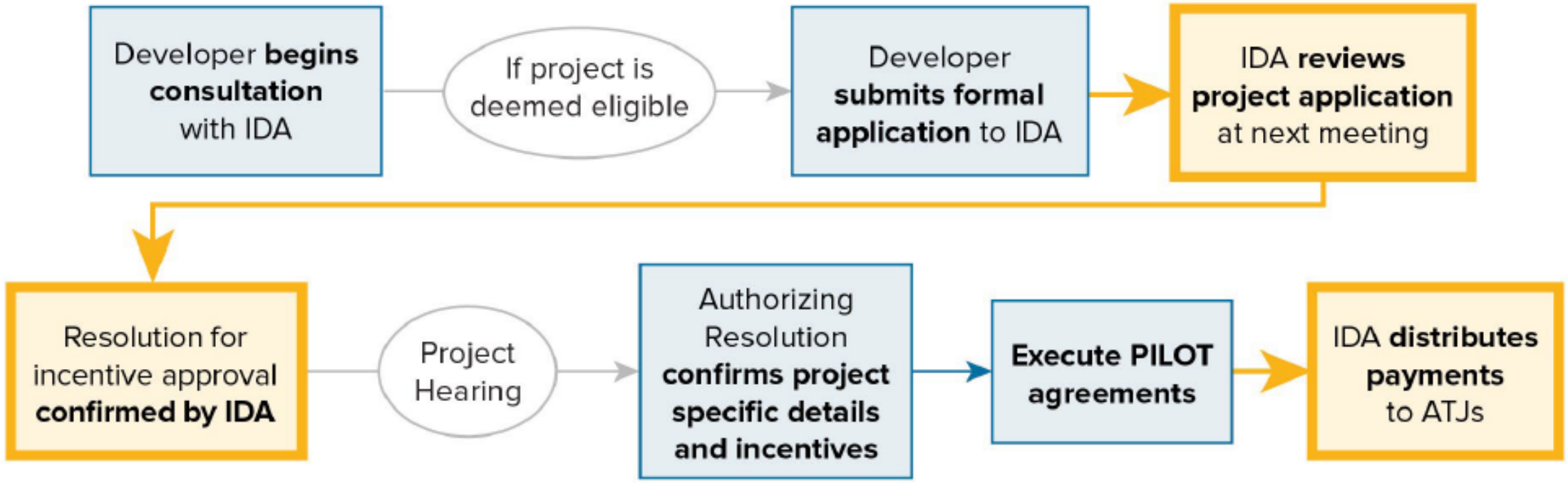


NYS RPTL §487 and PILOTs

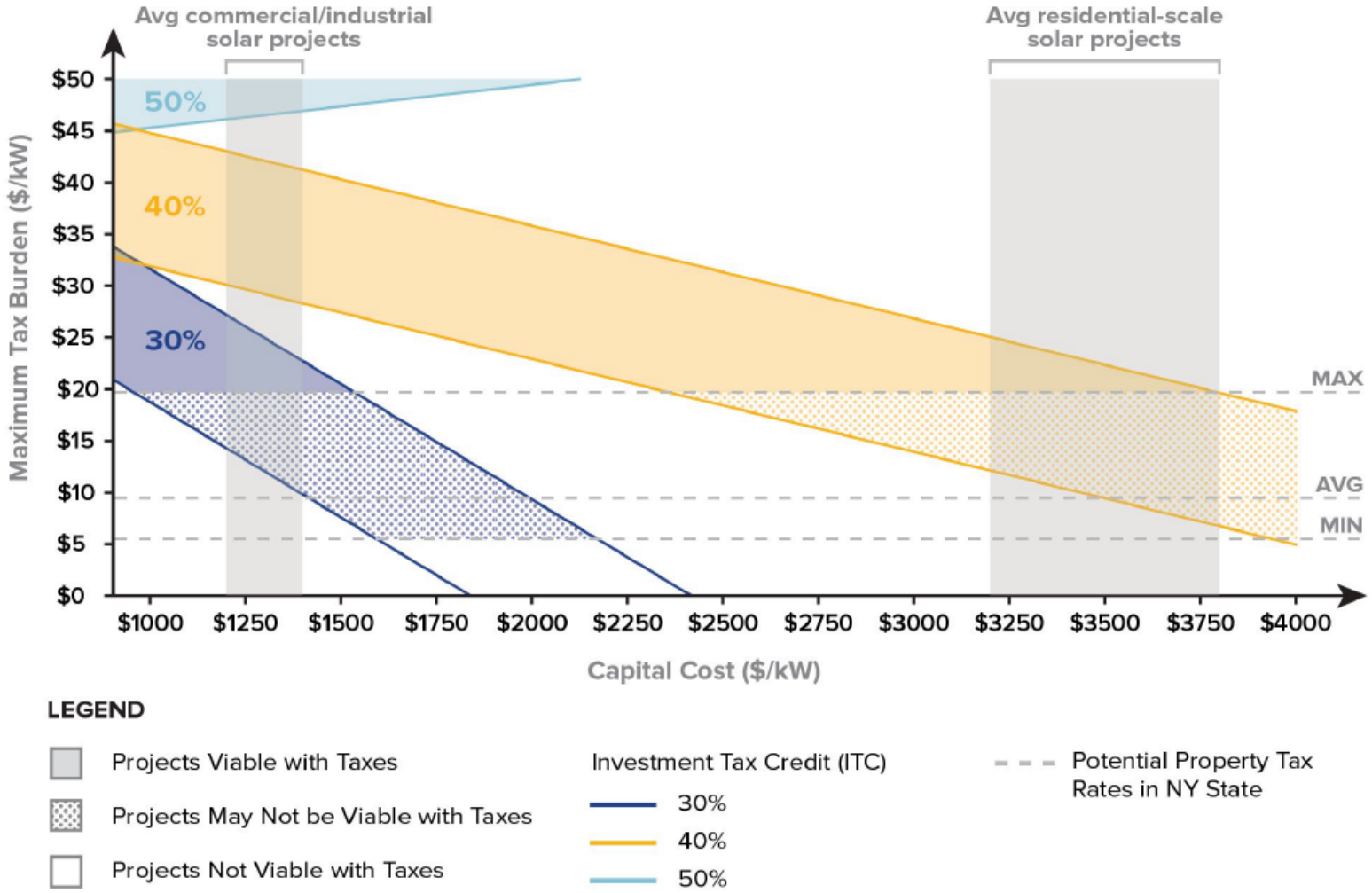
PILOTs vs. Real Property Tax

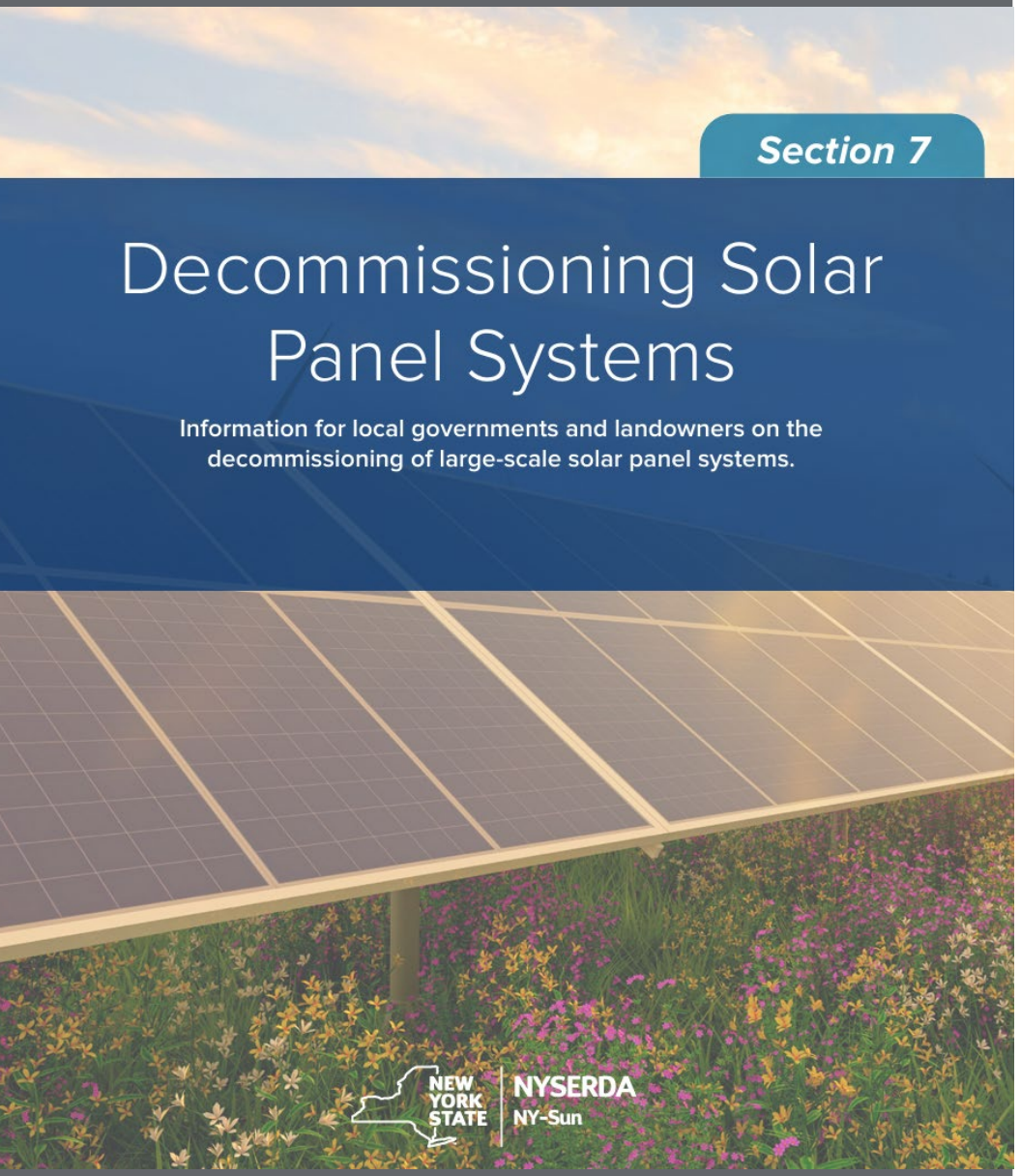
PILOTs	Real Property Taxes
Typically cost per megawatt ($/MW)	Percentage of assessed property value
Agreement term may not exceed 15 years (except if negotiated with an Industrial Development Agency), providing certainty around future payments developer will be required to make	Property assessment estimated using appropriate valuation method (e.g., discounted cash flow, market comparable, or cost-based approach) to calculate property tax
Total cost must not exceed the value owed if subjected to property tax	Annual growth in property taxes is capped at the lesser of 2% or the rate of inflation
Flexibility in determining cost developer will pay, though time needed to negotiate agreement	Mandated approach to applying property taxes, with no flexibility

IDA PILOT Process Flowchart



Max Property Taxes for a Solar Project to Remain Viable





Decommissioning

Section 1: Executive Summary

Section 2: Introduction

Section 3: What options are available at the end of a renewable energy's project's useful life?

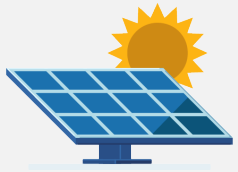
Section 4: Decommissioning

Section 5: Repowering Projects

Section 6: Conclusion

Appendix A: Inflation Primer

Typical Project Life and Decommissioning Planning



Solar PV

30-35 years (though typical performance warranty length is 25-30 years)

Onshore Wind Turbines

Approximately **30 years**

Battery Energy Storage Systems

As long as **25 years**
(depending on battery type)

Project Development

Project siting, permitting, financing

Develop initial decommissioning plan

Project Operations

Generates/stores electricity

Periodically update decommissioning plan

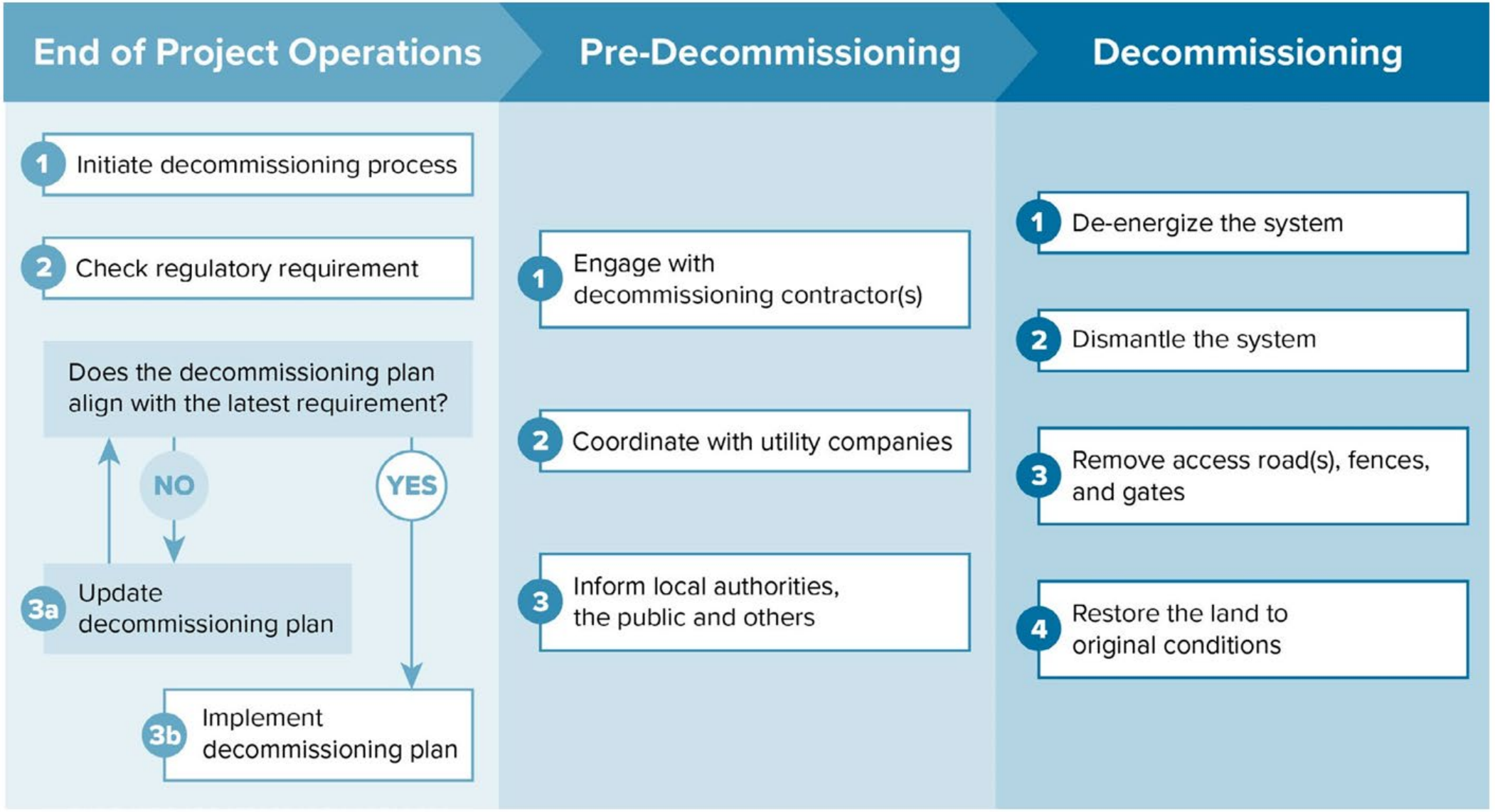
- *Update cost estimates*
- *Ensure plan adheres to latest regulations*
- *Maintain financial assurances, if required*

End of Useful Life / Project Abandonment

Decommission project

- *Dismantle system*
- *Recycle/dispose of equipment*
- *Return land to original state*

Decommissioning Activities



Recommended Decommissioning Plan Content

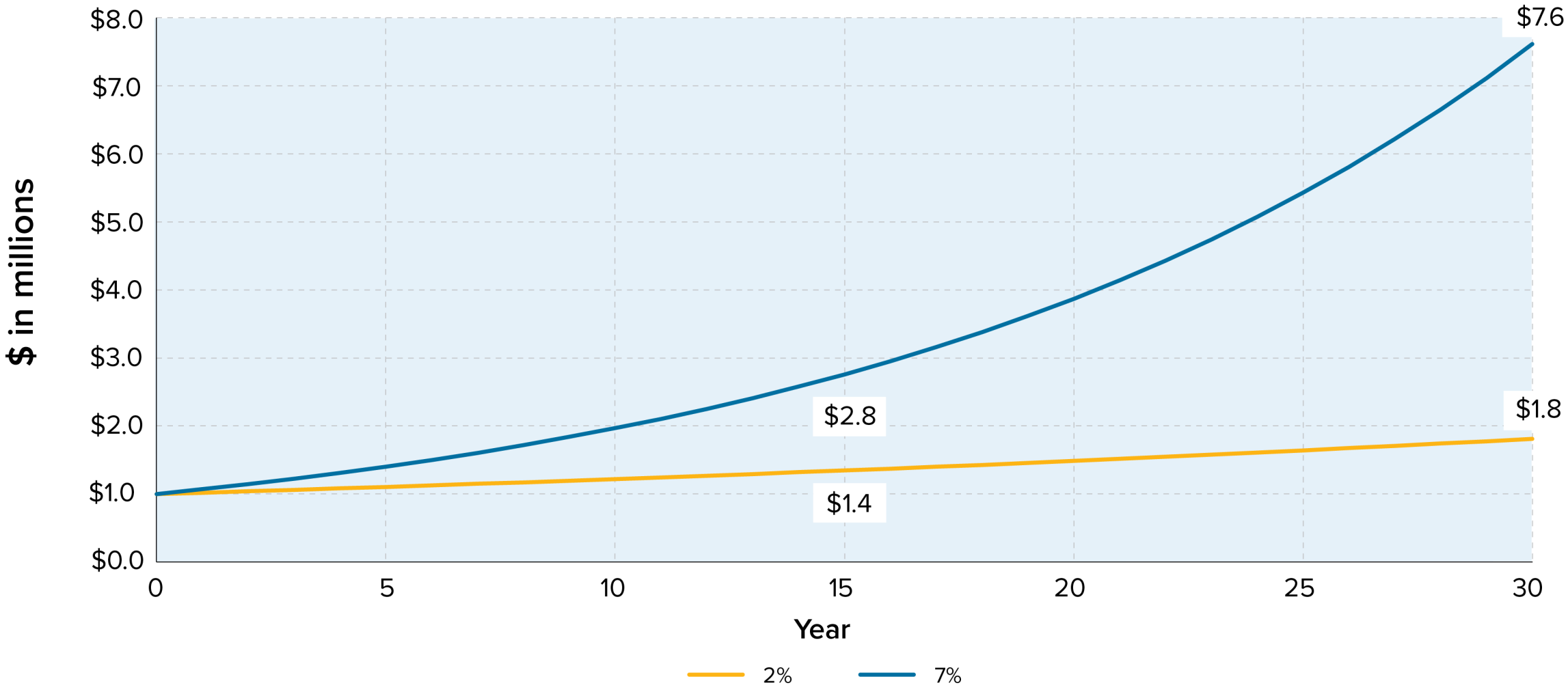
- Estimated **lifespan**
- Decommissioning **triggers**
- Decommissioning **duration**
- **Scope of work** for decommissioning
- **Roles and responsibilities** for involved parties
- **Estimated cost** of decommissioning
- **Financial surety**
- **End of life management** considerations, if applicable

Scan the QR code for more information on **NYSERDA's Model Solar Energy Local Law**

Options at the End of Initial Useful Life of a Renewable Energy Project

Continued Use	Decommissioning
Reuse: Continue to use and maintain the equipment beyond its useful life either at the project site or as part of a new project, such as residential use. Anticipate degradation in output over time.	**Recycling:** Recover high value materials such as metals and glass, between **80%-90%**[3] of the weight of a solar panel or wind turbine made of recyclable materials.
Refurbishment: The operator may make repairs to a solar panel to extend its lifespan. This can be challenging due to finding older parts or sufficiently experienced labor for older technologies.	**Repurpose:** Use components, or parts of components to create new products. For example, wind turbine blades have been used in the construction of pedestrian bridges. This is not a high-volume option.
Repowering: Retrofitting or replacing components of the system to restore or improve the project's output. For solar, this is typically performed through installing new solar panel arrays and inverters. For wind, this can be accomplished by upgrading blades or even replacing the towers and foundation based on technological improvements.	**Disposal:** Landfill disposal is the least expensive option, though it has significant environmental drawbacks. Some solar panels contain fully enclosed, but trace amounts of lead and cadmium,[4] and may be considered hazardous waste under USEPA legislation.[5] Certain states have enacted policies to limit solar panel waste.

Inflating Decommissioning Costs



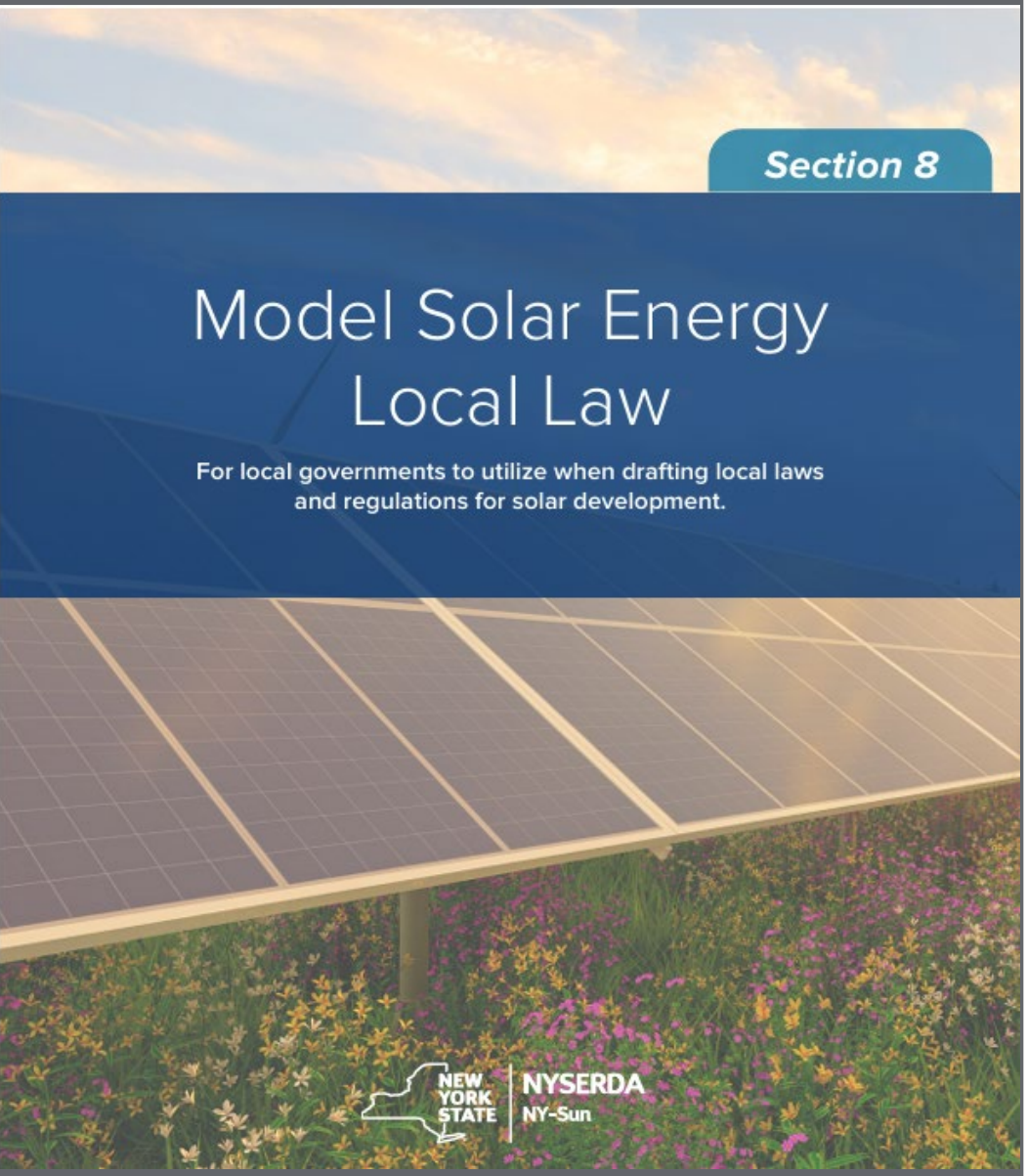
Mechanisms to Ensure Decommissioning

Financial

- Letters of Credit
- Decommissioning trusts / Escrow accounts
- Surety bonds

Non-Financial

- Land use regulation
- Decommissioning provisions in land-lease agreements
- Abandonment and removal clauses



Model Solar Energy Law Contents

PDF vs WORD

8. Permitting Requirements for Tier 3 Solar Energy Systems

All Tier 3 Solar Energy Systems are permitted through the issuance of a [special use permit] within the [XXXXXXXXXXXX, XXXXXXXXXX, XXXXXXXXXX] zoning districts, and subject to site plan application requirements set forth in this Section.

A. Applications for the installation of Tier 3 Solar Energy System shall be:

1. Reviewed by the [Code Enforcement/Zoning Enforcement Officer/Reviewing Board] for completeness. Applicants shall be advised within [30] days of the completeness of their application or any deficiencies that must be addressed prior to substantive review.

Commentary: Municipalities are encouraged to consider and establish a reasonable period for determining the completeness of a Solar Energy System permit application, which may be shaped by factors including:

- Availability and capacity of the Reviewing Board and/or municipal officials tasked with reviewing applications.
- Cadence of Reviewing Board meetings; if meetings are held monthly, a 30-day review period may be necessary to allow the Board to issue a completeness determination.
- Supplemental review and support services provided by a consultant or third-party.

2. Subject to a public hearing to hear all comments for and against the application. This hearing shall be in compliance with all existing public hearing requirements established under law by the [Village/Town/City].

Commentary: State law requires a public hearing and decision on special use permits but does not require notice to neighbors unless mandated under local law. If not already required by local law, localities may elect to require the following notice for proposed Tier 3 Solar Energy Systems to ensure adequate notice to adjoining landowners by adding the following provision:

"In addition to existing public notice requirements under local law, Applicants shall deliver notice by first class mail to adjoining landowners or landowners within [200] feet of the property at least [10] days prior to such a hearing. Proof of mailing shall be provided to the [Reviewing Board] at the public hearing."

3. Referred to the [County Planning Department] pursuant to General Municipal Law § 239-m if required.

4. Upon closing of the public hearing, the [Reviewing Board] shall take action on the application within 60-days of the public hearing, which can include approval, approval with conditions, or denial. The 60-day period may be extended upon consent by both the [Reviewing Board] and applicant.

B. Application & Site Plan Review Requirements. Applications for Tier 3 Solar Energy Systems, including materials for site plan

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B. Application & Site Plan Review Requirements. Applications for Tier 3 Solar Energy Systems, including materials for site plan review, shall include the following:

1. Name, address, and contact information of proposed or potential system installer and the owner and/or operator of the Solar Energy System. Such information of the final system installer shall be submitted prior to the issuance of building permit.

2. Name, address, contact information, and signature of the project applicant, as well as all the property owners, demonstrating their consent to the application and the use of the property for the Solar Energy System.

3. Nameplate Capacity of the Solar Energy System (as expressed in MW).

4. Zoning district designation for the parcel(s) of land comprising the Facility Area.

5. Property lines and physical features, including roads, for the project site.

6. Map(s) of MSG 1-4 soils and Active Agriculture Lands on the parcel(s) comprising the Facility Area and adjacent parcels.

7. Adjacent land uses on contiguous parcels within a certain radius of the site boundary.

8. Proposed changes to the landscape of the site, including site grading, vegetation clearing and planting, the removal of any large trees, access roads, exterior lighting, signage, fencing, landscaping, and screening vegetation or structures.

9. Erosion and sediment control and storm water management plans prepared to NYS Department of Environmental Conservation standards, if applicable, and to such standards as may be established by the Planning Board.

10. A one- or three-line electrical diagram detailing the entire Solar Energy System layout, including the number of

What Should Municipalities Do Before Drafting or Updating a Solar Energy Law?

Ensure the solar regulations conforms to existing plans and policies (farmland protection, sustainability, or climate action plans).

Review the available Hosting Capacity maps to learn if/where the solar development is economic and possible.

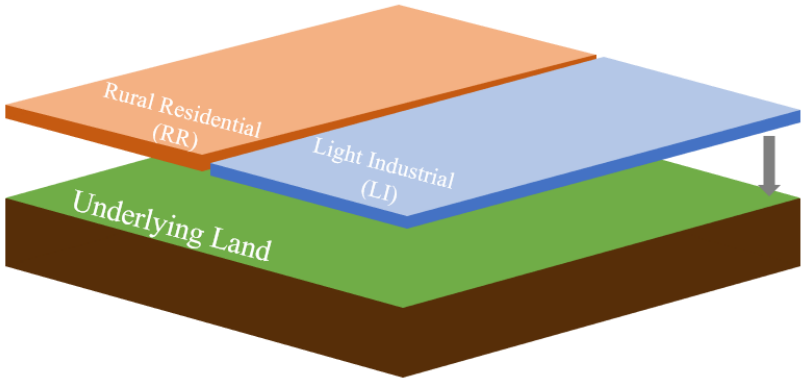
Amend the comprehensive plan – before, if not concurrently– to include a strategy for municipality-wide solar development.

Conduct outreach with the community to gather all available ideas, identify divergent groups and views, and secure support from the entire community.

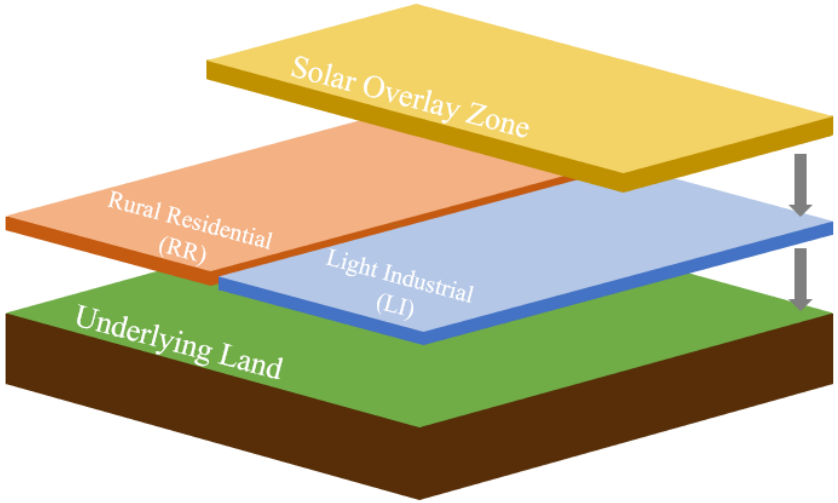
Create a working group that will conduct meetings on a community-wide basis and studies to determine whether existing policies, plans, and land use regulations require amendments to remove barriers to and facilitate solar energy development goals.

Choosing a Regulatory Tool for Solar

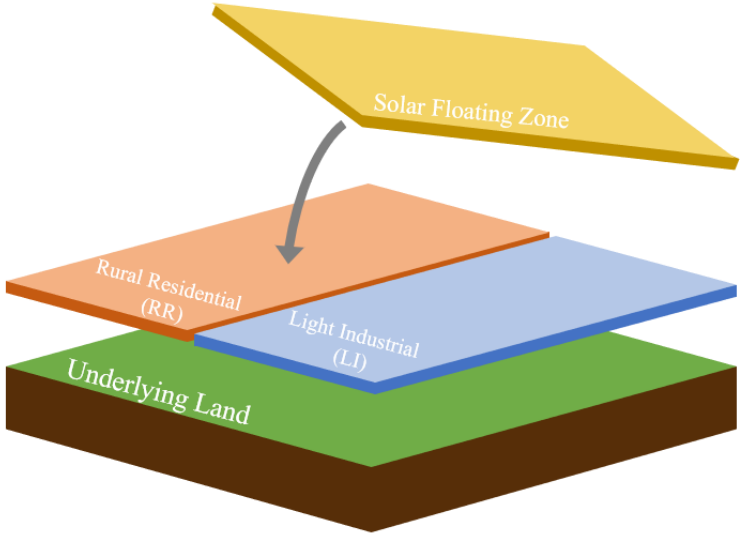
Conventional Zones



Overlay Zones



Floating Zones



Regulatory Tools for Communities without Conventional Zoning

Require formal approval after complying with several conditions, such as preparing site plan, decommissioning, and emergency response plans and removing the references to conventional zoning

- **Examples:**
  - **Site plan review**
  - **Local permits**
  - **Overlay districts**
  - **Stand-alone solar energy laws**
  - **Adopt a solar permit law**

Section 3: Definitions

System Energy System Classifications

- **Tier 1 Solar Energy System:**
  - Roof-Mounted
  - Building-Integrated
  - Ground Mounted – Nameplate capacity up to 25 kW AC [OR] panel surface area up to 4,000 sq ft
  - On-Farm Solar Systems

- **Tier 2 Solar Energy System:**
  Ground-Mounted systems not included in Tier 1 with a nameplate capacity up to [1] MW AC [OR] facility area up to [8] acres and generates no more than 110% of the energy used on this site.

- **Tier 3 Solar Energy System:**
  Ground-Mounted systems not included in Tier 1 or 2 with a nameplate capacity up to [5] MW AC [OR] facility area of up to [40] acres.

- **Tier 4 Solar Energy System:**
  Not included under Tier 1, Tier 2 of Tier 3 Solar Energy System
  Not included in Tier 1, 2, or 3. Includes new projects that are subject to state level siting process by the Office of Renewable Energy Siting and Electric Transmission (ORES)

Section 8: Tier 3 Permitting Requirements

B. Application & Site Plan Review Requirements

1. General information including name, address, and contact info of system installer, owner/ operator, property owners, & applicant
2. Nameplate Capacity of the system (MW)
3. Zoning district designation for the parcel(s) of land
4. Property lines and physical features of the project site
5. Map(s) of MSG 1-4 Soils and Active Agriculture Lands of the Facility Area
6. Adjacent land uses on contiguous parcels
7. Proposed changes to landscape, grading, vegetation, lighting, etc.
8. Erosion and sediment control and stormwater management plans prepared to NYSDEC standards
9. A one, or three-line electrical diagram showing layout, equipment components and associated National Electric Code compliant devices
10. Equipment specification sheet for proposed panels, significant components, mounting system and inverter
11. Property Operation and Maintenance Plan
12. Decommissioning Plan

Commentary: Operation and Maintenance Plan

If applicable, the Operation and Maintenance Plan should include plans for agrivoltaics: project-specific Strategic Grazing Management Plan

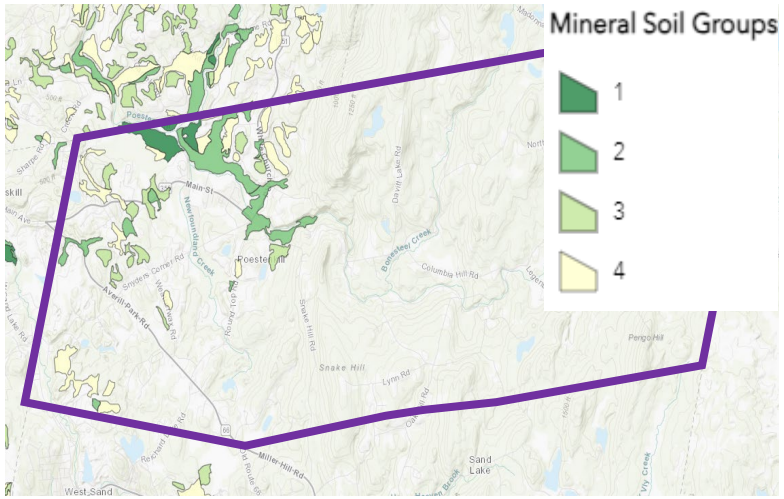
1. **Detail the crops that will be produced and a plan of 3-to-7-year duration for the class(es) of livestock intended for the site**
2. **Adress herd size, forage availability, time of year, acreage to be grazed, weather conditions, and producer requirements**
3. **Mention any restrictions on the use of fertilizer or herbicide for long-term operation and site maintenance**
4. **Provide for scheduled upkeep of screening vegetation planted as part of the screening and visual impact mitigation plan.**

Section 8: Tier 3 Systems Permitting Requirements

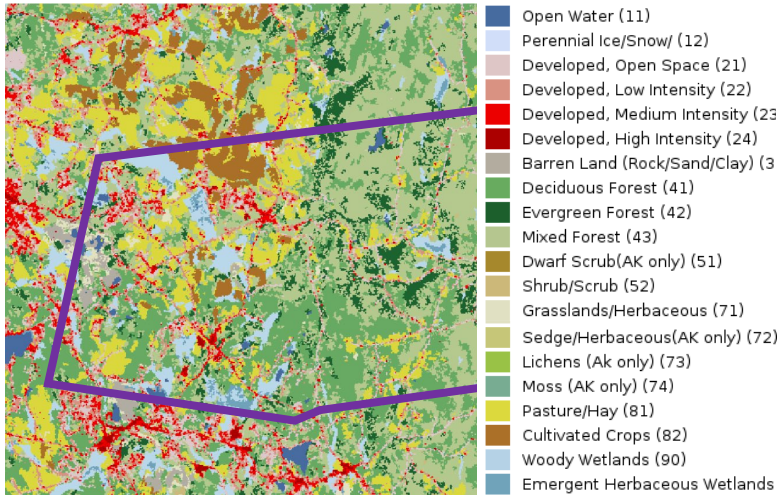
C. Special Use Permit Standards

1. Underground Requirements
2. Vehicular Paths
3. Signage
4. Glare
5. Lighting
6. Multiple Lots
7. Lot Size
8. Setbacks
9. Height
10. Lot Coverage
11. Fencing Requirements
12. Screening and Visibility
13. Environmental Resources
14. Agricultural Resources

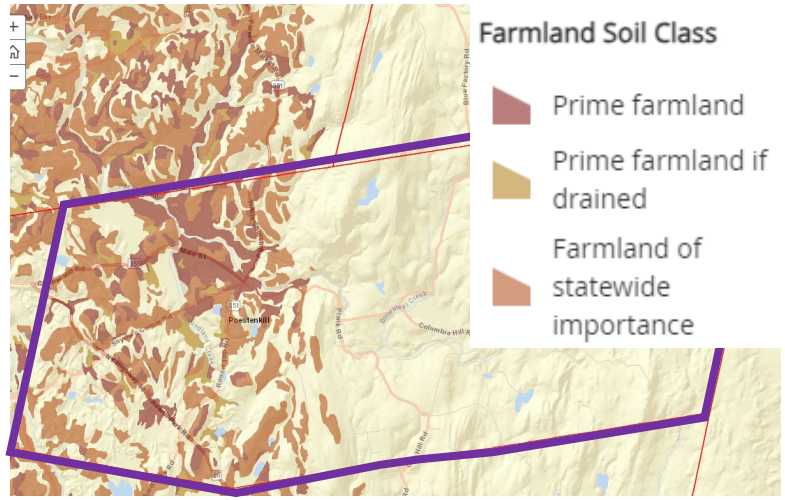
Protecting Agricultural Resources



Mineral Soil Groups were established to create a uniform statewide land classification system based on the differences in soil productivity and capability. MSG 1-4 are recognized highly productive soils based on their combination of physical and chemical properties.



Active Agricultural Land: used for a Farm Operation in accordance with Agriculture and Markets Law § 301 – uses of which include production of crops, livestock, and livestock products – within the past 5 years.



Prime Farmland soils have the combination of physical & chemical characteristics for producing food, fiber, and/or other crops.
Farmland of Statewide Importance: do not meet the criteria for Prime Farmland or Prime Farmland if Drained, but are classified as mineral soils in priority land capability classes.

USDA NRCS: United States Department of Agricultural Natural Resources Conservation Service

Commentary: Waiver Provisions

- **Municipalities may elect to include waiver provisions that provide flexibility for the Reviewing Board, in its discretion, to waive certain requirements for Solar Energy Systems which:**
  1. **are harmonious with existing land uses where proposed, and/or**
  2. **based on system size or other considerations, need not adhere to the law's special use permit and site plan regulations.**

- **The waiver may be partial, to allow the Reviewing Board to require a proposed facility to:**
  1. **comply only with individual requirements in the law OR**
  2. **remove certain special use permit standards, such as required fencing, for smaller projects or other situations where the community deems these standards unnecessary.**

This is especially useful to encourage agrivolatic projects.

General Resources

NYS Department of State Division of Local Government Services
Planning & Land Use Regulation Resources

NYS Department of State Division of Local Government Services
Local Laws Search

NYS Department of State Division of Local Government Services
Training and Assistance

New York Planning Federation
Planning and Zoning Training Series

American Planning Association Planning and Law Division
Property Topics and Concepts

American Planning Association
Are You Solar Ready?

University of Wisconsin-Stevens Point, Center for Land Use Education
Planning Implementation Tools: Overlay Zoning

National Renewable Energy Laboratory
U.S. Solar Siting Regulation and Zoning Ordinances

Land Use Law Center
Planning Implementation Tools: Overlay Zoning

Additional Resources

Comprehensive Planning

NYSERDA
Comprehensive Plan Guide

NYSDOS Division of Local Government Services
Zoning and the Comprehensive Plan
Guide to Planning and Zoning Laws of New York State

Legal Memo
"Defining a Community Through the Plan"

Syracuse University
NYS Comprehensive Plan Development

Clean Energy

NYSERDA
Solar Guidebook
Energy Storage Guidebook
Wind Energy Guidebook

American Planning Association
Sustaining Places: Best Practices for Comprehensive Plans

Solar Energy, Knowledgebase Collection

NYS Climate Smart Communities
Comprehensive Plan with Sustainability Elements

Agrivolatics Resources

AgriSolar Clearinghouse

NYSERDA: Solar Installations on Ag Lands

Smart Solar Siting for New England: Policy Strategies for Farmland Protection American Farmland Trust

Solar Energy Industries Association (SEIA): Solar and Agricultural Land Use

Scenic Hudson: Solar Ready, Climate Resilient: Best Practices and Recommendations for Solar Zoning in the Hudson Valley

Solar Energy Technologies Office, DOE Office of Energy Efficiency & Renewable Energy: Farmer's Guide to Going Solar

U.S. Department of Agriculture: Farmland Solar Policy Design Toolkit

InSPIRE: Low-Impact Solar Development Strategies Guidebook

Funding and Technical Assistance

Local, County, and Regional Planning Agencies

- Clean Energy Community Coordinators

NYS Resources/Programs:

- **NYS Consolidated Funding Application**
- **Climate Smart Communities Grant Program**
- **NYS Dept. of Ag and Markets: Farmland Protection Planning Grants Program**
- **NYS Dept. of State:**
  - **Office of Planning and Development: Smart Growth Comprehensive Planning Grant Program**
  - **Division of Local Government Services: Local Government Efficiency Program**

Questions?

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