

NEW YORK STATE OF OPPORTUNITY. | Division of Local Government Services

Solar Energy Regulation

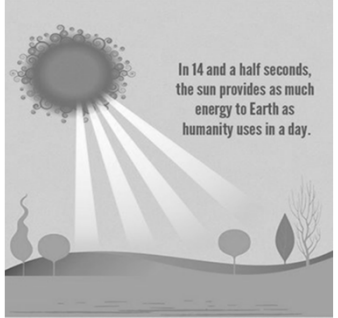
A Division of the New York Department of State

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Solar benefits

- No consumption of natural resources
- No pollutants generated
- Sustainable
- Renewable
- Sunshine is free



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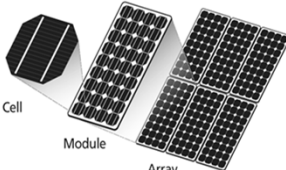
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Converting sunlight into electricity

Solar collectors: devices or systems that use solar radiation as energy source for generation of electricity or transfer of stored heat.

1. **Cell:** basic element of PV system
2. **Module/Panel:** multiple cells electrically connected
3. **Array:** multiple modules/panels connected to create system



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Tier I:
Roof-Mounted Solar Energy Systems or Building-Integrated Solar Energy Systems


Tier II:
Ground-Mounted systems that generate up to 110% of electricity consumed on site over the previous 12 months

Tier III:
Not included in list for Tier I or Tier II Solar Energy Systems

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Prepare for solar in your community




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Know your solar potential

- Identify sunlight as an environmental asset in comprehensive plan
- Try online measuring tools (such as Google Project Sunroof)



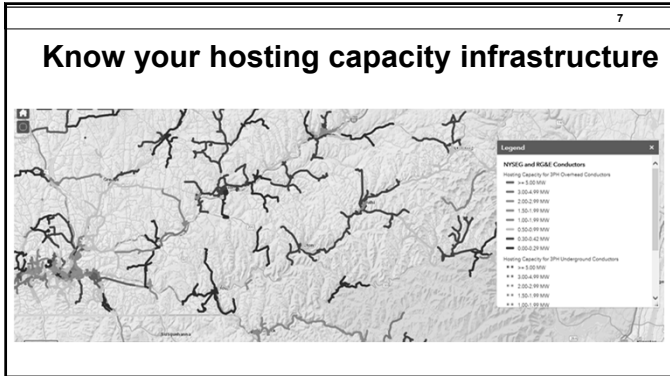
Overall
Total estimated size and solar electricity production of viable roofs for zip code 12210

Roofs	Roofs
87%	2K

If all the viable solar installations were implemented, the amount of avoided CO2 emissions from the electricity sector in zip code 12210 would be:

Carbon dioxide metric tons	=	Passenger cars taken off the road for 1 yr	=	Tree seedlings grown for 10 yrs
11.2K		2.4K		287K

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Moratorium

Local law or ordinance

- Temporary restriction on development
- Addresses new or unforeseen uses
 - Specify duration (long enough to plan and amend regulations, 3 to 6 months)
 - May be extended by subsequent enactments

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How to be solar friendly

1. Adopt resolution/policy statement outlining strategy for municipal-wide solar development
2. Appoint Solar Energy Task Force to prepare action plan; amend comp plan
3. Charge Task Force with conducting meetings
4. Establish training program for local staff and land use boards
5. Partner with adjacent communities and/or county to adopt compatible policies, plan components, and zoning provisions

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Establishing clear goals

- Can encourage solar projects, reduce obstacles to planning approvals and/or permitting
- Use visioning process to integrate solar into:
 - Comprehensive plan
 - Climate Smart plan
 - Energy plan

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Clearly define permitting process

- Review existing permit process for inefficiencies
- Consider fair permit fee
 - Residential: fixed flat fee or set dollar amount/Watt
 - Commercial: rate for staff time plus additional review costs
- Adopt NY Unified Solar Permit

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NYSERDA's Unified Solar Permit Application

Helps Code Enforcement Officers review and evaluate systems for grid-tied residential installations 25 kW or less

Includes resources to review solar electric project proposals:

- Overview of design issues
- Field inspection checklist
- Solar basics, including equipment, financing, and terminology, sample maps/photos

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Private lease agreements

- Between property owner and lessee
- Non-profits, non-governmental agencies, and private attorneys may provide guidance

For more information:

- *Landowner Considerations for Solar Land Leases Fact Sheet* by NYS Sun
- *Solar Farm Lease Q & A* by Cornell Cooperative Extension, Sullivan Alliance for Sustainable Development, Sullivan County Real Property Department, and NY-Sun

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Municipal procurement toolkit

Step-by-step instructions on how to lease underutilized municipal land (landfills and brownfields) for solar development.

Includes:


- template Request for Proposals (RFP),
- template Lease Agreement, and
- Model Law for Counties subject to NY County Law § 215

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Suffolk County “power lots”

- Over 60,000 carport modules
- 17 MW generated
- Powers 1,850 homes



H. Lee Dennison Building, Hauppauge
1.75 MW generated

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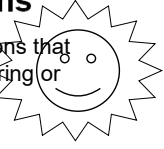
Zoning

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Solar friendly access provisions

- Prohibit conditions, covenants, and restrictions that prevent homeowners' associations from barring or placing undue burden on solar energy
- Voluntary solar easements with adjacent landowner to ensure sunlight reaches property
- Other regulations in planning and zoning process that preserve solar access

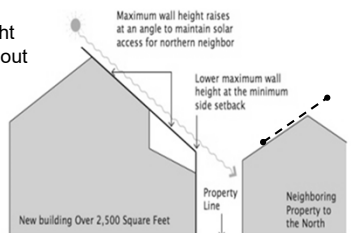


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Access

- Access: ability of one property to receive sunlight across property lines without obstruction
 - Calculated using sun path diagram
- Shading: shade from vegetation or building on adjoining properties



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Subdivision for maximizing direct sunlight

- Site buildings & vegetation so direct light reaches southern exposure of greatest number of buildings
- Layout so maximum number of buildings receive direct sunlight
- Orient roads on east-west axis
- Highest densities south-facing; lower densities north-facing



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Town of Elmira, Chemung County

Chapter 217. Zoning

§ 217-73. Solar energy systems and solar access.

“To the maximum extent possible, all new development proposals totaling 10 acres of site area or more may be designed so the maximum number of buildings shall receive direct sunlight sufficient for using solar energy systems for space, water, or industrial process heating or cooling.

Buildings and vegetation should be sited and maintained so that unobstructed direct sunlight reaches the southern exposure of the greatest number of buildings...”

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Adopt solar language in zoning

- Clearly define Tiers 1-3 solar collectors and identify those desired in your community:
 - Reduce risk of unwanted or inappropriate development
 - Increase project conformity and likelihood that community solar desires will be met
 - Increase development opportunity for property owners
- NYS Model Solar Energy Law

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Zoning for Tier I systems

Residential



Commercial



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Roof-mounted panels

- Distribution of mounting points
 - Most panels weigh 20-50 lbs
 - Distributed properly, only 3-4 lbs per sf of load added
- Wind uplift and sail effect
- “Setbacks” from edge and roof peak for firefighters



www.nysed.ny.gov/-/media/NYSun/files/Contractor-Resources/Residential-roof-top-access-and-ventilation-requirements.pdf

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Firefighter safety

- Primary Risks:
 - Electrocutation
 - Increased load burden & trip hazards
- Challenges:
 - PV system is not always visible
 - Shut downs not always obvious
 - Cutting power to the home ≠ panels stop generating energy
 - Legacy systems



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Firefighter safety

- Identify the PV System
- Shut down every disconnect from the system
- Main PV breaker, AC to inverter, all DC disconnects, main battery
- **Avoid** contact w/ damaged PV's & all metal components
- Maintain distance when spraying fire

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Firefighter safety

- Require detailed disconnect process from installer/homeowner at permitting
- Panel access walkways, wiring installation depth (reduces cutting hazards), rapid shut down, clear signage
- Require installers to respond during emergencies
- 24/7 hotline helps locate shut-offs

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Historic districts

- Avoid primary facade
- Low-profile panels
 - Solar shingles laminates, glazing, or similar materials should not replace original or historic materials
 - Avoid installation in windows, on walls, siding, and shutters
 - Panels should be flat and not alter roof slope
- Must be reversible

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Minimize visibility

- Panels and mechanical equipment should be as unobtrusive as possible
- Hidden below and behind parapet walls and dormers, or on rear-facing roofs
- Compatible in color to established roof materials
- Thin film nearly invisible

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Accessory use: Awning

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Zoning for Tier II ground-mounted systems

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Site plan review considerations

- Street address and tax map parcel number
- All required setbacks, including rooftop access and ventilation requirements as applicable
- Location of array, inverter, disconnects, and point of interconnection
- Array azimuth and tilt
- For ground mounted systems, length and location of trenches
- Location and type of rapid shutdown device, if applicable

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Site plan review considerations, continued

- Locations of active farmland and prime farmland soils, wetlands, permanently protected open space, Priority Habitat Areas and BioMap
- Critical Natural Landscape Core Habitat mapped by Natural Heritage & Endangered Species Program and "Important Wildlife Habitat" mapped by DEP
- Locations of floodplains or inundation areas for moderate or high hazard dams

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Special use permit

- Use allowed by zoning but subject to additional requirements or conditions
- Use will not adversely effect neighborhood if conditions are met
- Designed to assure that use is in harmony with zoning

The diagram illustrates a residential property layout with various setbacks and permitted areas for solar installations. Key features include:

- Street/common access or yard:** Located on the left side of the property.
- Front Yard Prohibited:** A shaded area at the top of the property where solar is not allowed.
- Front Façade SUP:** A shaded area below the front yard where solar is permitted.
- Side Yard:** Two shaded areas on either side of the main property, with small boxes indicating permitted solar locations.
- Rear Yard:** A shaded area at the bottom of the property with a small box indicating permitted solar location.
- Roof SUP:** A central area on the roof with a box indicating permitted solar location.

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Tier III solar installations

Potential benefits

- Rural economic development
- Brownfield redevelopment
- Renewable energy
- Grid reliability

Concerns

- Farmland conversion
- Reduced scenic values
- Soil compaction/erosion
- Habitat impacts
- Increased impermeable surfaces

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Principal use table

	Residential-1 (R1)	Residential-2 (R2)	Residential-3 (R3)	Commercial (C)	Industrial (I)	Public (P)
PRINCIPAL USE						
Medium-Scale Ground-Mounted Solar Energy System	SPR	SPR	SPR	Y	Y	Y
Large-Scale Ground-Mounted Solar Energy System	SP	N	SPR	SPR	SPR	SPR

Y = Allowed
 SP = Special Permit
 N = Prohibited
 SPR = Site Plan Review

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Accessory use table

	Residential-1 (R1)	Residential-2 (R2)	Residential-3 (R3)	Commercial (C)	Industrial (I)	Public (P)
ACCESSORY USE						
Roof-Mounted Solar Energy System	Y	Y	Y	Y	Y	Y
Small-Scale Ground-Mounted Solar Energy System	Y	Y	Y	Y	Y	Y
Medium-Scale Ground-Mounted Solar Energy System	SPR	SPR	SPR	Y	Y	Y

Y = Allowed
 SP = Special Permit
 N = Prohibited
 SPR = Site Plan Review

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Agricultural considerations

- How does it affect the farm's agricultural assessment in a state certified Agricultural District
- Right-to-Farm protections
 - Agricultural and Markets Law §305-a
- Can I graze sheep under the panels?
 - Does this mean the land is still in agricultural use?
 - Is this allowed by the solar company?
- Assume conversion is permanent
- Special considerations for removal/decommissioning plans

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Agricultural & environmental areas

Prohibit, restrict, or avoid installation:

- Prime or unique soils, or of statewide or local significance
- Wetlands
- Critical Environmental Areas



NYS Department of Agriculture & Markets:

- Guidelines for Construction Mitigation for Agricultural Lands

https://www.agriculture.ny.gov/ap/aqservices/Solar_Energy_Guidelines.pdf

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Energy Storage

- Convert renewable energy into forms that are easy to store
- Store excess energy for later use
- Energy storage batteries are:
 - Charged with electricity from various sources, incl. solar arrays
 - Generate production and usage data
 - Store energy produced during off peak periods (which would otherwise be wasted)
 - Deploy stored energy during peak usage periods, emergencies or outages
 - Used to reduce or eliminate usage costs



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Special Use Permit for Tier III solar

1. Determine conditions under which large scale solar will be granted SUP approval
2. List potential mitigation conditions to reduce impact, in the event that projects are approved upon conditions
3. Amend zoning to allow large-scale solar by SUP in districts where agricultural uses dominate

TIP:

Designate whichever board approves site plan applications as the same board to approve these SUPs.

Then applicants with fully developed site plan applications can combine approvals and streamline the process.

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Review for Tier III solar

When determining approval standards, consider:

1. Current land use and soil types
2. Siting goals
3. Construction requirements
4. Restoration requirements, including 2 year monitoring and remediation right after restoration
5. Decommissioning

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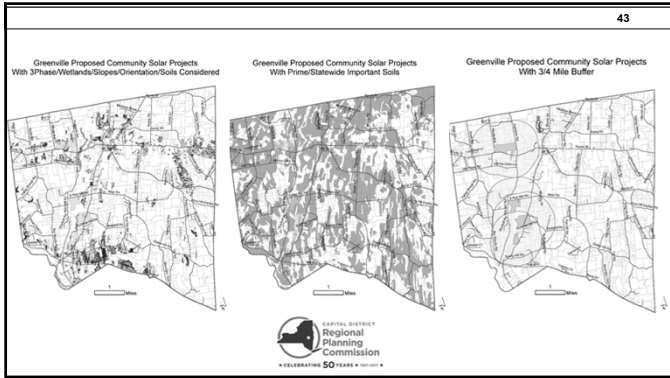
1. Current land use and soil types

Avoid arrays on most valuable or productive farmland--especially "prime farmland soils" or "soils of statewide importance"

Order of importance of current use:

- active rotational farmland
- permanent hayland
- improved pasture
- unimproved pasture
- other support lands
- fallow/inactive farmland

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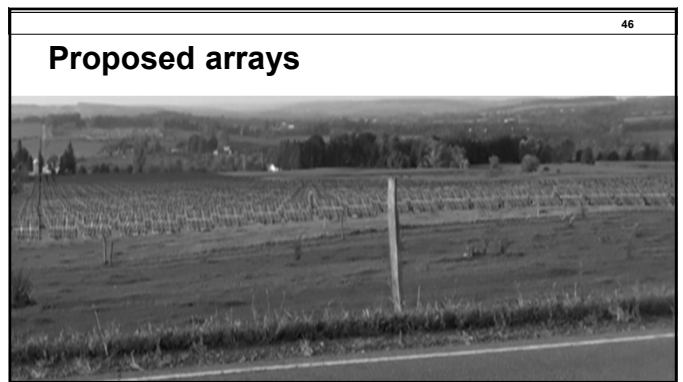
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- ## 2. Siting Goals
- Minimize adverse impacts to normal farming operations, fencing and watering systems;
 - Locate overhead collection lines in nonagricultural areas and along field edges;
 - Avoid dividing larger fields into smaller fields;
 - Reduce drainage problems by locating access roads along ridge tops, follow field contours;
 - limit access road width in agricultural fields to no more than 16 feet to minimize the loss of agricultural land; and
 - Avoid existing drainage and erosion control structures.

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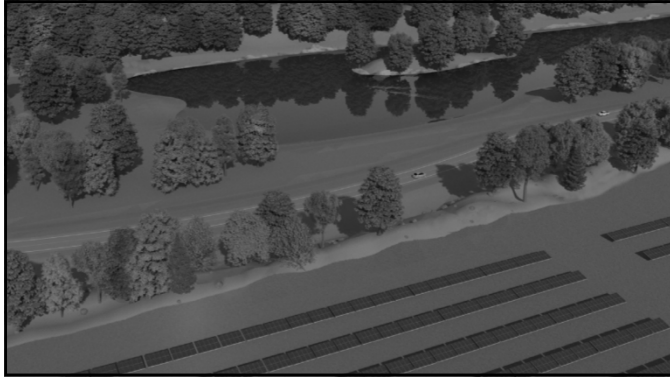
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3. Construction requirements

- Level access road with adjacent agricultural field surface;
- Use culverts/waterbars to maintain natural drainage patterns;
- Save topsoil from areas used for vehicle and equipment traffic, parking, and equipment and storage areas;
- Bury interconnected cables;
- Remove excess subsoil and rock from the site;
- Use fences around work areas to prevent livestock access;
- Properly dispose of wire, bolts, and other unused metal.

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4. Restoration requirements

- Decompact disturbed agricultural areas;
- Regrade access roads to allow for farm equipment crossing and restore original drainage patterns;
- Seed restored areas with seed mix specified by landowner;
- Repairing all surface or subsurface drainage structures damaged during construction; and,
- Following restoration, remove all construction debris from site.

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Removal of unsafe structures

Town Law §130. Town ordinances.

16. Unsafe buildings and collapsed structures.

- Providing for the removal or repair of buildings in business, industrial and residential sections that, from any cause, may now be or shall hereafter become dangerous or unsafe to the public.
- g. For the assessment of all costs and expense incurred by the town in connection with the proceedings to remove or secure, including the cost of actually removing said building or structure, against the land on which said buildings or structures are located.

Attractive nuisances.

- A landowner may be held liable for injuries to children trespassing on the land if the injury is caused by an object on the land that is likely to attract children.

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Decommissioning

- Address abandonment, decommissioning or “cessation of activity” within your regulations
- Example: “Must ensure site will be restored to useful, nonhazardous condition, including completion time frame for complete removal of collectors, mounts and other associated equipment and facilities”
- Consider decommissioning plans, especially for commercial scale projects

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Decommissioning mechanisms

Financial Tools

➤ Decommissioning provisions in land-lease agreements

- Decommissioning trusts or escrow accounts*
- Removal or surety bonds*
- Letters of credit*

* No statutory authority for these mechanisms for decommissioning funding

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Performance bonds

Generally, municipalities can't require performance or maintenance bond for permitted project without expresses statutory authorization

- Town Law §277 Subdivision review
 - Performance bond or other security.
 - Term of security agreement. Any such performance bond or security agreement shall run for a term to be fixed by the planning board, **but in no case for a longer term than three years**, provided, however, that the term of such performance bond or security agreement may be extended by the planning board with consent of the parties thereto.

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Decommissioning mechanisms

Non-financial tools

- Abandonment and removal clause
- Special permit application
- Temporary variance/special permit process

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Decommissioning sample checklist

<input type="checkbox"/> Define conditions when decommissioning will be initiated	<input type="checkbox"/> Description of any agreement (e.g., lease) with landowner regarding decommissioning
<input type="checkbox"/> Remove all nonutility owned equipment, conduit, structures, fencing, roads, and foundations	<input type="checkbox"/> The party responsible for decommissioning
<input type="checkbox"/> Restore property to condition prior to solar development	<input type="checkbox"/> Plans for updating the decommissioning plan
<input type="checkbox"/> Timeframe for completion of decommissioning activities	<input type="checkbox"/> Before final electrical inspection, prove that plan was recorded with Register of Deeds

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Decommissioning example

Town of Tonawanda §215-182 Abandonment or Decommissioning

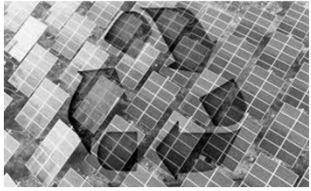
A. A solar energy system shall be deemed abandoned when it fails to produce energy for at least one (1) year.

B. For all utility-scale solar energy systems, the applicant shall submit a decommissioning plan for review and approval as part of the special use permit application. The **decommissioning plan shall identify the anticipated life of the project, method and process for removing all components of the solar energy system and returning the site to its pre-existing condition**, and estimated decommissioning costs, including any salvage value.

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Solar Recycling



Community concerns:

- Hazardous materials: Cadmium & Lead

Is recycling solar panels possible?

Answer: Yes and No

- Up to 85% of silicone-based & up to 95% thin film panels can be recycled
 - Even Cadmium & Lead are recyclable
- Complicated to separate components
- Recycling not widely available in US
- Regional partnerships are taking shape
- However, NYS has an insufficient waste stream to incentivize private companies to provide these services so far.

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NY Real Property Tax Law § 487

- 15-year real property tax exemption for renewable energy systems, including solar
- Applies to value that solar electric system adds to overall property value; does not exempt all property tax
- All local governments offer exemption to all projects unless they opt out
 - Can't choose to tax large systems, but not small ones
 - To reinstate exemption, repeal in same manner as the opt out

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Payment in Lieu of Taxes (PILOT)

- Often used for large-scale renewable energy projects, including solar
- Annual payments commonly related to system's size (dollars per megawatt)
- Can't exceed taxes that would be owed without the exemption
- NYSERDA Solar PILOT Toolkit helps with PILOT agreements for Community Solar projects larger than 1 MW

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Public Service Law Article 10

Absolute local authority over land use decisions diminished for "major electric generating facilities" of at least 25 MW.

State Siting Board (5 state agency representatives; 2 ad hoc of the public from region) to ensure that local zoning issues are adequately addressed:

- Determines locations
- Authority to override unreasonably burdensome local regs
- 60 days to deem application complete
- Final decision within 1 year for new projects; 6 months if modifying certain existing facilities

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Long Island Solar, 200 acres

- Brookhaven National Lab
- Largest on east coast
- 164,312 panels; 32 MW
- Generation equivalent to annual usage of 4,500 homes



Brookhaven, NY

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The Climate Leadership and Community Protection Act (CLCPA)

- Reduce greenhouse gas (GHG) emissions:
 - Generate zero GHG emissions from electricity production by 2040; and
 - 40 percent reduction in emission by 2030
- Increase renewable electricity:
 - Increase renewable sources to 70 percent by 2030, and
 - Develop or support:
 - 9000 MW of offshore wind electric generation by 2035;
 - 6000 MW of distributed photovoltaic solar generation by 2025; and
 - 3000 MW of energy storage capacity by 2030



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Accelerated Renewable Energy Growth and Community Benefit Act

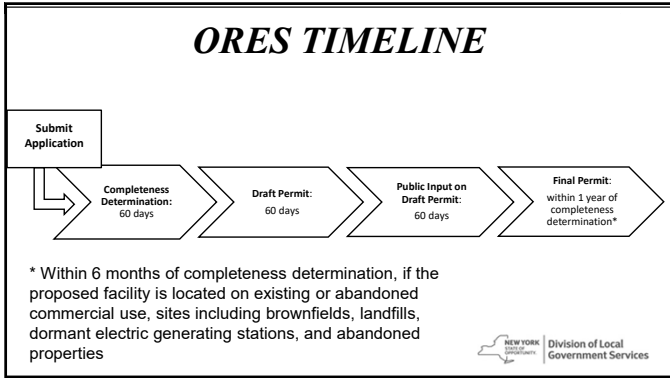
- To achieve CLCPA targets, the Accelerated Renewable Energy Growth and Community Benefit Act was passed in April 2020.
- The Act establishes the Office of Renewable Energy Siting, housed within the Department of State, which consolidates the environmental review of major renewable energy facilities and provide a single forum to ensure that siting decisions are predictable, responsible, and delivered in a timely manner along with opportunities for input from local governments.
- For more information: <https://ores.ny.gov/>

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Qualifying Renewable Energy Projects

- New Projects 25 MW or more
- New Projects between 20 MW to 24.9 MW: May opt in § 94-c
- Current Article 10 Projects: May opt in § 94-c
- Projects under 20 MW: Local Review

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Local Government Involvement in § 94-c Review Process

No application will be deemed as complete without proof of consultation with the local governments and communities where the project site is located.

The proposed regulations provide public notices at various milestones throughout the permitting process and make application materials available in both electronic and paper format.

Draft siting permits will be subject to public review and comment and adjudicatory hearings will be required when significant and substantive issues are identified.

Within the 60 day comment period, the host municipalities must submit a statement indicating whether the proposed renewable energy facility complies with applicable local laws.

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Division of Local Government Services

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Intervenor Funds

- An amount equal to \$1,000/MW of facility capacity must be paid into a local agency account hosted by NYSERDA.
- Intervenor funding will be made available to a host municipality, political subdivision, or local community members per regulations to be established by the Office.
- Funding can be used by eligible entities for participation in public comment period or adjudicatory hearing.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Local Government Services

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Regulations

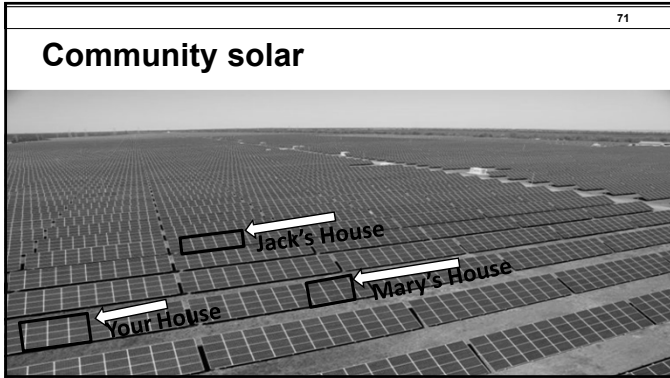
Pursuant to the State Administrative Procedure Act (SAPA), draft regulations and uniform standards and conditions are available for public comment at <https://ores.ny.gov/regulations>

ORES seeks public comment during the initial development of uniform standards and conditions through public hearings: <https://ores.ny.gov/events>

All stakeholders and the public had an opportunity to formally submit comments on the draft regulations until November 16, 2020 and the draft uniform standards and conditions (Subparts 900-6) until December 6, 2020.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Local Government Services



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Community-based "Community Solar"

- 80,000 sq. ft. 1920's era public school
- Vacant nearly 6 years within West side Buffalo's Green Development Zone
- Targeted for high-end lofts
- Community successfully lobbied for a moratorium to determine best uses for the site
 - Residents actively engaged throughout the planning process
- "We were interested in the time between the application and ribbon cutting, and how interaction could improve the school." *—Rahwa Ghirmatzion PUSH Buffalo Exec. Dir.*

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Community-based “Community Solar”



\$14.8 Million redevelopment led by Push Buffalo:

- 30 affordable, energy-efficient senior apartments
- HQ for three non-profits
- Black box theater
- Shared recreation + meeting space
- **64 kw community solar project**
- Green Roof



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Community-based “Community Solar”

- 1st NYS community solar project to offer discounted energy entirely to low-income subscribers
- Subscription available to all 30 units



- Renovations + solar installation completed by locally trained green collar workers
- Workers paid living wage rates

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Additional Resources

- NYSERDA, *Clean Energy Siting for Local Governments* Guidebooks, Training and Technical Assistance: <https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Siting>
- Google, *Project Sunroof*: <https://www.google.com/get/sunroof>
- NY Dept. of Public Service, *Hosting Capacity Maps*: <https://www3.dps.ny.gov/W/PSCWeb.nsf/All/6143542BD0775DEC85257FF10056479C?OpenDocument>
- Pace Land Use Law Center and NYSERDA, *Zoning for Solar Energy: Resource Guide*. <https://digitalcommons.pace.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1004&context=environmental>
- New York Solar Guidebook **for Local Governments**. <https://www.nyserda.ny.gov/-/media/NYSun/files/solar-guidebook.pdf>

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Contact information

NYS Department of State
Division of Local Government
 (518) 473-3355
www.dos.ny.gov/lq/lut/index.html

NYS Energy Research & Development Authority
 (518) 862-1090
www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Siting

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This toolkit is meant to assist New York State municipalities considering payment-in-lieu-of taxes (PILOT) agreements for community solar projects larger than 1 megawatt (MW).

Overview

NYSERDA developed this resource in collaboration with communities, solar developers, the utilities, and others. The Solar PILOT Toolkit includes (1) a Model Solar PILOT Law, (2) a Model Solar PILOT Agreement and (3) a Solar PILOT Calculator for NYS taxing jurisdictions.¹

As the administrator of the NY-Sun Program, NYSERDA is responsible for helping customers across the State adopt clean, renewable sources of energy. NY-Sun provides financial incentives for the installation of solar (also known as photovoltaic or PV) panel systems that convert sunlight into electricity. The rooftop solar systems you see in your neighborhood probably participated in the NY-Sun program.

In addition to residential, commercial, and municipal projects, a relatively new kind of solar project, “community solar,” has emerged as an efficient and affordable way for all New Yorkers to gain access to clean energy. The solar panel systems on your neighbors’ roofs are likely in the 4 to 7 kilowatt (kW) size range. Community solar projects are much larger, typically in the 2,000-kW range, and allow individuals (including renters and others who cannot install a system on their own roof for whatever reason) to purchase individual panels or some fraction of the electricity the entire system generates. These customers receive credits for this electricity on their monthly utility bills.

A community solar project brings revenues and benefits to a community and its residents in several ways. The owner of a project site will typically lease land to the solar company in return for lease payments. Community solar customers, which may include municipalities, businesses, and residents, save money on their utility bills. Taxing jurisdictions can benefit from PILOT payments. At the same time, given the passive nature of a solar array, a solar project does not create increased demands on municipal services and infrastructure.

Real Property Tax Law (RPTL) § 487

As a measure to promote the installation of clean energy sources, the New York State legislature adopted a section of the RPTL § 487 that exempts the value of a solar panel system from local property taxes.² Under the law, any increase in the property value attributable to the addition of the solar panel system is exempt from property tax. The RPTL § 487 exemption has been a cornerstone of the State’s efforts to meet its clean energy goals, providing essential economic incentives for solar. The law does, however, allow any taxing jurisdiction (town, school, etc.) to “opt-out” of the tax exemption by adopting a local law or resolution, making the added value of a solar panel system fully taxable.

Alternatively, a taxing jurisdiction that does not opt-out can require a solar developer to pay an annual fee or “payment-in-lieu of taxes” as a replacement for the taxes it would have otherwise collected. Under the law, PILOT amounts cannot exceed what the tax amount would have been without the exemption. Additionally, the law does not allow jurisdictions to partially opt out of the law to generate tax revenue from large solar projects while exempting the small systems of homeowners. Opting out of RPTL § 487 makes community solar projects financially unviable and makes homeowners’ rooftop systems more expensive.

NYSERDA understands that many communities have little or no experience with solar PILOT agreements or with assessing the value of large-scale solar projects. Information is difficult to obtain by consulting other communities because few communities have completed large-scale solar projects. Two common questions have arisen from New York State municipal officials and other interested parties:

- (1) If we do not opt-out and seek a PILOT, what is a fair PILOT amount based on what projects can afford?
- (2) What are the steps to negotiate a successful PILOT agreement?

The answer to the first question is complicated, as PILOTs are often negotiated for individual projects, and the PILOT amount a project can afford depends on many factors, including construction and maintenance costs, and the amount of revenue from electricity sales. From the point of view of solar developers, if the PILOT amount is too high,

¹ The terms “taxing jurisdictions” and “jurisdictions” include counties, cities, towns, villages and school districts.

² New York State Real Property Tax Law § 487 provides a 15-year real property tax exemption for properties located in New York State with renewable energy systems, including solar electric systems. The law applies only to the value that a solar electric system adds to the overall value of the property; it does not mean that landowners with an installed renewable energy system are exempt from all property tax. Local governments have the option to opt out of RPTL § 487 and tax solar projects at the full property tax rate, but doing so can impact project economics in a way that unintentionally prohibits developers from building projects. For more information on RPTL § 487, see [Understanding New York State’s Real Property Tax Law § 487 fact sheet](#). A local government that does not opt out of RPTL § 487 can still generate revenue through PILOT agreements.

they will not be able to make the project economically feasible, and will not proceed. So, the amount of revenue available for a PILOT is dependent on the overall project economics. The first question then becomes, “What PILOT amount will allow the jurisdiction and its residents to enjoy the benefits of the project, but will not make the project financially unviable and unattractive to a developer?”

NYSERDA’s research indicates that PILOT rates should be negotiable between 1% and 3% of the compensation solar developers receive for the electricity their projects generate.³ This research includes an independent analysis of current solar market data and an analysis of solar project compensation rates established under the preliminary value stack in the New York Public Service Commission’s March 2017 Value of Distributed Energy Resources (VDER) order. The new solar energy compensation methodology will likely reduce project revenue. NYSERDA will review and update its PILOT guidance regularly; taxing jurisdictions are encouraged to adjust their PILOT rates accordingly.

NYSERDA offers the Solar PILOT Toolkit as a resource to help municipalities and solar developers negotiate successful PILOT agreements. The following describes the Toolkit’s contents.

Solar PILOT Toolkit

1. The Model Solar PILOT Law

The Model Solar PILOT Law, or resolution, provides a sample template for jurisdictions that wish to establish the legal authority to implement a formulaic, jurisdiction-wide PILOT agreement process with solar developers. The model law cites the appropriate laws to do so and includes blank fields for jurisdictions to fill in. The model law exempts projects smaller than 1 MW AC as the amount of PILOT revenue may not justify the cost of negotiating the PILOT.

2. The Model Solar PILOT Agreement

Only jurisdictions that **do not** opt out of RPTL § 487 may enter PILOT agreements. The Model Solar PILOT Agreement provides a draft contract jurisdictions may sign with solar

developers. The agreement can be tailored to meet a jurisdiction’s specific needs and includes blank fields for the jurisdiction to fill in. Jurisdictions may negotiate PILOT rates with solar developers on a project-by-project basis, or may adopt a jurisdiction-wide rate for certain types of solar panel systems, typically in the form of annual payments based on a dollar-per-MW rate.

3. The Solar PILOT Calculator

This tool provides PILOT rate guidance for solar projects and includes two separate calculators.⁴ **Calculator One** should be used to set a uniform PILOT rate across an entire jurisdiction.

The following table displays sample PILOT rates generated by Calculator One for a 2-MW AC community solar project in each utility service territory. The “Low” and “High” rates represent 1% and 3% of the compensation solar developers receive for the electricity their projects generate. NYSERDA’s research of solar project economics across the State indicates that such projects should be able to afford rates within this range.

	Low (\$/MW AC)	High (\$/MW AC)
Central Hudson	\$2,600	\$7,600
Orange & Rockland	\$3,200	\$9,500
National Grid	\$1,700	\$5,100
NYSEG	\$1,700	\$5,000
Con Edison	\$3,700	\$11,100
Rochester Gas & Electric	\$1,700	\$5,000

Calculator Two should be used to set PILOT rates on a project-by-project basis. It is highly customizable, taking into account extensive project-specific data and all factors affecting solar project economics. Users may accept the default values but are encouraged to enter project-specific data. Calculator Two estimates PILOT rates based on the net present value of a project’s unlevered cash flow that achieves a specified pre-tax internal rate of return.

³ NYSERDA continuously assesses market data and Public Service Commission proceedings and may revise this Toolkit when appropriate.

⁴ Each calculator’s outputs reflect the sum total of all PILOT payments, property taxes from taxing jurisdictions which have opted-out of the exemption, and special district taxes (which are not exempt under RPTL § 487).

NY-Sun, a dynamic public-private partnership, will drive growth in the solar industry and make solar technology more affordable for all New Yorkers. NY-Sun brings together and expands existing programs administered by the New York State Energy Research and Development Authority (NYSERDA), Long Island Power Authority (LIPA), PSEG Long Island, and the New York Power Authority (NYPA), to ensure a coordinated, well-supported solar energy expansion plan and a transition to a sustainable, self-sufficient solar industry.

PERMIT APPLICATION

NY State Unified Solar Permit

Unified solar permitting is available statewide for eligible solar photovoltaic (PV) installations. Municipal authorities that adopt the unified permit streamline their process while providing consistent and thorough review of solar PV permitting applications and installations. Upon approval of this application and supporting documentation, the authority having jurisdiction (AHJ) will issue a building and/or electrical permit for the solar PV installation described herein.

PROJECT ELIGIBILITY FOR UNIFIED PERMITTING PROCESS

By submitting this application, the applicant attests that the proposed project meets the established eligibility criteria for the unified permitting process (subject to verification by the AHJ). The proposed solar PV system installation:

- Yes No 1. Has a rated DC capacity of 25 kW or less.
- Yes No 2. Is not subject to review by an Architectural or Historical Review Board. (If review has already been issued answer YES and attach a copy)
- Yes No 3. Does not need a zoning variance or special use permit. (If variance or permit has already been issued answer YES and attach a copy)
- Yes No 4. Is mounted on a permitted roof structure, on a legal accessory structure, or ground mounted on the applicant's property. If on a legal accessory structure, a diagram showing existing electrical connection to structure is attached.
- Yes No 5. The Solar Installation Contractor complies with all licensing and other requirements of the jurisdiction and the State.
- Yes No 6. If the structure is a sloped roof, solar panels are mounted parallel to the roof surface.

For solar PV systems not meeting these eligibility criteria, the applicant is not eligible for the Unified Solar Permit and must submit conventional permit applications. Permit applications may be downloaded here: [BUILDING DEPARTMENT WEBSITE] or obtained in person at [BUILDING DEPARTMENT ADDRESS] during business hours [INDICATE BUSINESS HOURS].

SUBMITTAL INSTRUCTIONS

For projects meeting the eligibility criteria, this application and the following attachments will constitute the Unified Solar Permitting package.

- This application form, with all fields completed and bearing relevant signatures.
- Permitting fee of \$[ENTER FEE HERE], payable by [ENTER VALID PAYMENT METHODS, If checks are allowed INCLUDING WHO CHECKS SHOULD BE MADE PAYABLE TO]
- Required Construction Documents for the solar PV system type being installed, including required attachments.

Completed permit applications can be submitted electronically to [EMAIL ADDRESS] or in person at [BUILDING DEPARTMENT ADDRESS] during business hours [INDICATE BUSINESS HOURS].

APPLICATION REVIEW TIMELINE

Permit determinations will be issued within [TIMELINE] calendar days upon receipt of complete and accurate applications. The municipality will provide feedback within [TIMELINE] calendar days of receiving incomplete or inaccurate applications.

FOR FURTHER INFORMATION

Questions about this permitting process may be directed to [MUNICIPAL CONTACT INFORMATION].

PROPERTY OWNER

Property Owner's First Name

Last Name

Title

Property Address

City

State

Zip

Section

Block

Lot Number

EXISTING USE

Single Family 2-4 Family Commercial Other

PROVIDE THE TOTAL SYSTEM CAPACITY RATING (SUM OF ALL PANELS)

Solar PV System: _____ kW DC

SELECT SYSTEM CONFIGURATION

Make sure your selection matches the Construction Documents included with this application.

Supply side connection with microinverters Load side connection with DC optimizers
 Supply side connection with DC optimizers Load side connection with microinverters
 Supply side connection with string inverter Load side connection with string inverter

SOLAR INSTALLATION CONTRACTOR

Contractor Business Name

Contractor Business Address

City

State

Zip

Contractor Contact Name

Phone Number

Contractor License Number(s)

Contractor Email

Electrician Business Name

Electrician Business Address

City

State

Zip

Electrician Contact Name

Phone Number

Electrician License Number(s)

Electrician Email

Please sign below to affirm that all answers are correct and that you have met all the conditions and requirements to submit a unified solar permit.

Property Owner's Signature

Date

Solar Installation Company Representative Signature

Date

SUBMITTAL REQUIREMENTS SOLAR PV 25KW OR LESS (ATTACHMENTS)

NY State Unified Solar Permit

This information bulletin is published to guide applicants through the unified solar PV permitting process for solar photovoltaic (PV) projects 25 kW in size or smaller. This bulletin provides information about submittal requirements for plan review, required fees, and inspections.

Note: Language in [ALL CAPS] below indicates where local jurisdictions need to provide information specific to the jurisdiction. Language in italics indicates explanatory notes from the authors of this document that may be deleted from the distributed version.

PERMITS AND APPROVALS REQUIRED

The following permits are required to install a solar PV system with a nameplate DC power output of 25 kW or less:

- a) Unified Solar Permit
- b) [LIST TYPE OF PERMIT(S) REQUIRED BY THE LOCAL JURISDICTION, i.e., ELECTRICAL OR BUILDING PERMIT].

Planning review [IS/IS NOT] required for solar PV installations of this size.

Fire Department approval [IS/IS NOT] required for solar PV installations of this size.

SUBMITTAL REQUIREMENTS

In order to submit a complete permit application for a new solar PV system, the applicant must include:

- a) Completed Standard Permit Application form which includes confirmed eligibility for the Unified Solar Permitting process. This permit application form can be downloaded at [WEBSITE ADDRESS].
- b) Construction Documents, with listed attachments [SAMPLES ARE AVAILABLE IN Understanding Solar PV Permitting and Inspecting in New York State AT WEBSITE ADDRESS]. Construction Documents must be by stamped and signed by a New York State Registered Architect or New York State Licensed Professional Engineer.

[MUNICIPALITY NAME], through adopting the Unified Solar Permitting process, requires contractors to provide construction documents, such as the examples included in the Understanding Solar PV Permitting and Inspecting in New York State document. Should the applicant wish to submit Construction Documents in another format, ensure that the submittal includes the following information:

- Manufacturer/model number/quantity of solar PV modules and inverter(s).
- String configuration for solar PV array, clearly indicating the number of modules in series and strings in parallel (if applicable).
- Combiner boxes: Manufacturer, model number, NEMA rating.
- From array to the point of interconnection with existing (or new) electrical distribution equipment: identification of all raceways (conduit, boxes, fittings, etc.), conductors and cable assemblies, including size and type of raceways, conductors, and cable assemblies.
- Sizing and location of the EGC (equipment grounding conductor).
- Sizing and location of GEC (grounding electrode conductor, if applicable).
- Disconnecting means of both AC and DC including indication of voltage, ampere, and NEMA rating.
- Interconnection type/location (supply side or load side connection)
- For supply side connections only, indication that breaker or disconnect meets or exceeds available utility fault current rating kAIC (amps interrupting capacity in thousands).
- Ratings of service entrance conductors (size insulation type AL or CU), proposed service disconnect, and overcurrent protection device for new supply side connected solar PV system (reference NEC 230.82, 230.70).
- Rapid shutdown device location/method and relevant labeling.

c) (For Roof Mounted Systems) A roof plan showing roof layout, solar PV panels and the following fire safety items: approximate location of roof access point, location of code-compliant access pathways, code exemptions, solar PV system fire classification, and the locations of all required labels and markings.

d) Provide construction drawings with the following information:

- The type of roof covering and the number of roof coverings installed.
- Type of roof framing, size of members, and spacing.
- Weight of panels, support locations, and method of attachment.
- Framing plan and details for any work necessary to strengthen the existing roof structure.
- Site-specific structural calculations.

e) Where an approved racking system is used, provide documentation showing manufacturer of the racking system, maximum allowable weight the system can support, attachment method to roof or ground, and product evaluation information or structural design for the rack.

PLAN REVIEW

Permit applications can be submitted to [DEPARTMENT NAME] in person at [ADDRESS] and [IF APPLICABLE] electronically through: [WEBSITE/EMAIL/FAX].

FEES

[PROVIDE CLEAR FEE SCHEDULE]

INSPECTIONS

Once all permits to construct the solar PV installation have been issued and the system has been installed, it must be inspected before final approval is granted for the solar PV system. On-site inspections can be scheduled by contacting [DEPARTMENT] by telephone at [PHONE NUMBER] or electronically at [WEBSITE OR EMAIL ADDRESS]. Inspection requests received within business hours are typically scheduled for the next business day. If next business day is not available, inspection should happen within a five-day window. [IF MUNICIPALITY ACCEPTS THIRD PARTY INSPECTIONS, INDICATE THIS AND PROVIDE A LIST OF APPROVED INSPECTORS].

In order to receive final approval, the following inspections are required:

Delete Rough/Final inspection descriptions if not applicable in your jurisdiction

[ROUGH INSPECTION, IF REQUIRED] During a rough inspection, the applicant must demonstrate that the work in progress complies with relevant codes and standards. The purpose of the rough inspection is to allow the inspector to view aspects of the system that may be concealed once the system is complete, such as:

- Wiring concealed by new construction.
- Portions of the system that are contained in trenches or foundations that will be buried upon completion of the system.

It is the responsibility of the applicant to notify [ENTER CONTACT INFORMATION] before the components are buried or concealed and to provide safe access (including necessary climbing and fall arrest equipment) to the inspector. The inspector will attempt, if possible, to accommodate requests for rough inspections in a timely manner.

[FINAL INSPECTION] The applicant must contact [INSERT CONTACT INFORMATION] when ready for a final inspection. During this inspection, the inspector will review the complete installation to ensure compliance with codes and standards, as well as confirming that the installation matches the records included with the permit application. The applicant must have ready, at the time of inspection, the following materials and make them available to the inspector:

- Copies of as-built drawings and equipment specifications, if different than the materials provided with the application.
- Photographs of key hard to access equipment, including;
 - Example of array attachment point and flashing/sealing methods used.
 - Opened rooftop enclosures, combiners, and junction boxes.
 - Bonding point with premises grounding electrode system.
 - Supply side connection tap method/device.
 - Module and microinverter/DC optimizer nameplates.
 - Microinverter/DC optimizer attachment.

[MUNICIPALITY NAME] has adopted a standardized inspection checklist, which can be found in the Understanding Solar PV Permitting and Inspecting in New York State document, found here: [WEBSITE ADDRESS].

The inspection checklist provides an overview of common points of inspection that the applicant should be prepared to show compliance. If not available, common checks include the following:

- Number of solar PV modules and model number match plans and specification sheets number match plans and specification sheets.
- Array conductors and components are installed in a neat and workman-like manner.
- Solar PV array is properly grounded.
- Electrical boxes and connections are suitable for environment.
- Array is fastened and sealed according to attachment detail.
- Conductor's ratings and sizes match plans.
- Appropriate signs are property constructed, installed and displayed, including the following:
 - Sign identifying PV power source system attributes at DC disconnect.
 - Sign identifying AC point of connection.
 - Rapid shutdown device meets applicable requirements of NEC 690.12.
- Equipment ratings are consistent with application and installed signs on the installation, including the following:
 - Inverter has a rating as high as max voltage on PV power source sign.
 - DC-side overcurrent circuit protection devices (OCPDs) are DC rated at least as high as max voltage on sign.
 - Inverter is rated for the site AC voltage supplied and shown on the AC point of connection sign.
 - OCPD connected to the AC output of the inverter is rated at least 125% of maximum current on sign and is no larger than the maximum OCPD on the inverter listing label.
 - Sum of the main OCPD and the inverter OCPD is rated for not more than 120% of the buss bar rating.

UNIFIED SOLAR PERMITTING RESOURCES

The jurisdiction has adopted the following documents from the New York Unified Solar Permit process: Delete any documents not adopted by the jurisdiction.

- Standard Application [WEB ADDRESS]
- Understanding Solar PV Permitting and Inspecting in New York State document, which includes sample construction documents, inspection checklist, design review checklist, and labelling guide [WEB ADDRESS]

DEPARTMENTAL CONTACT INFORMATION

For additional information regarding this permit process, please consult our departmental website at [WEBSITE] or contact [DIVISION NAME] at [PHONE NUMBER].