NEW YORK STATE OF OPPORTUNITY.

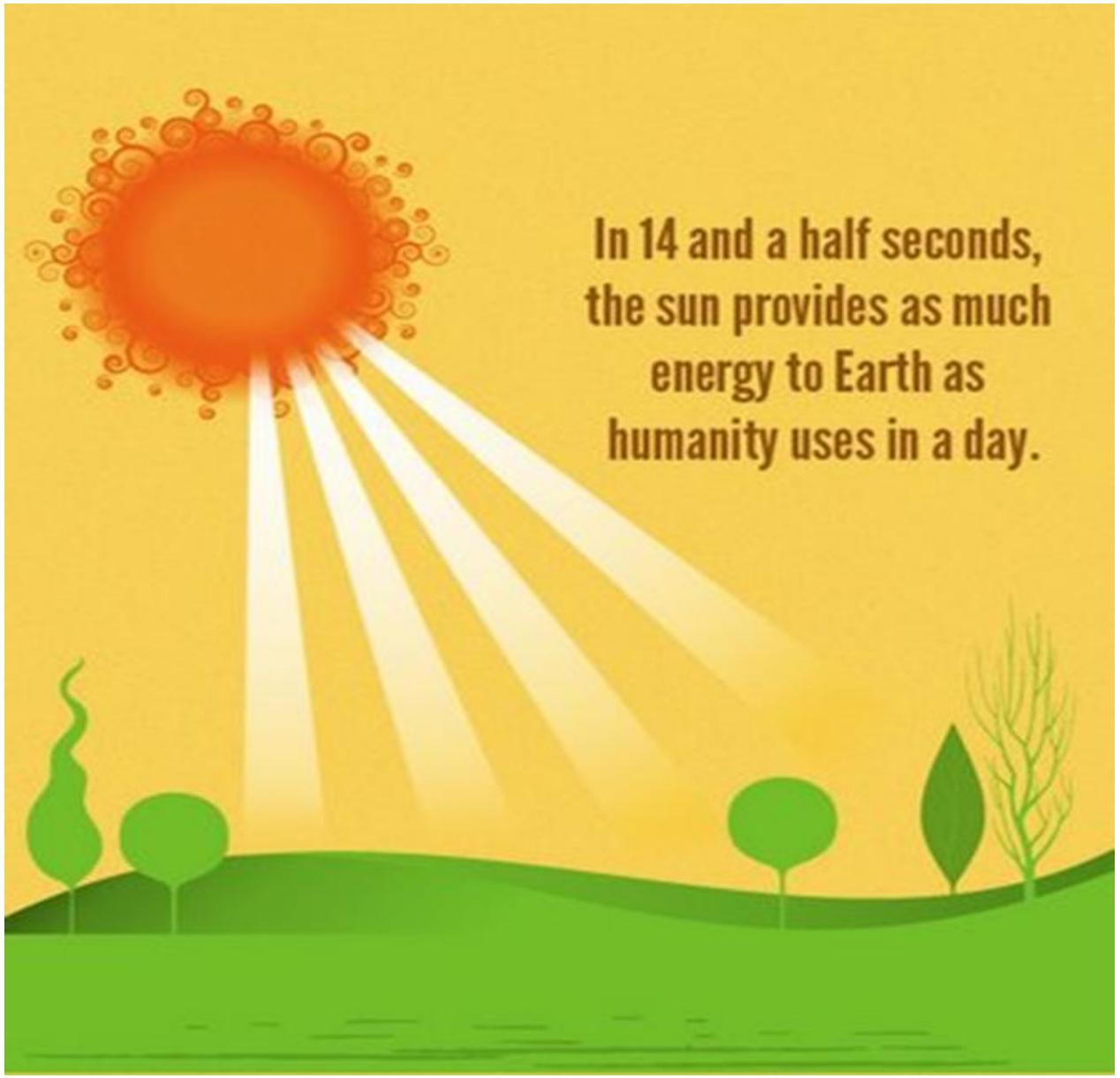
Division of Local Government Services

Solar Energy Regulation

A Division of the New York Department of State

Solar benefits

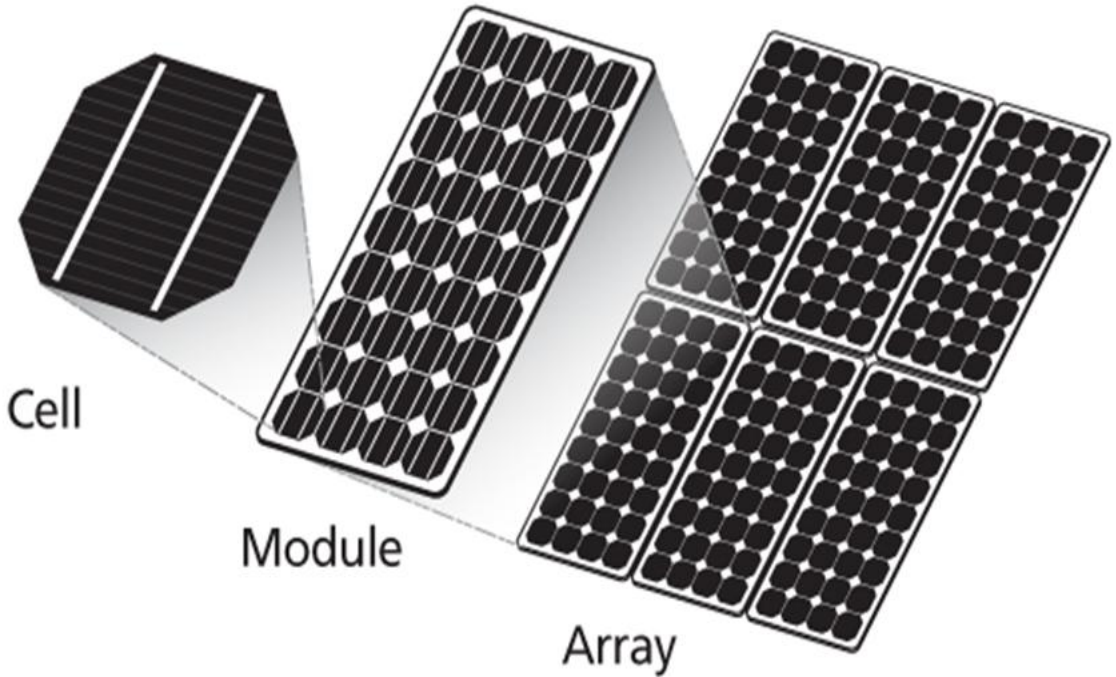
- No consumption of natural resources
- No pollutants generated
- Sustainable
- Renewable
- Sunshine is free



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



Two types of systems

Roof-mounted

panels on roof or rack system

Ground-mounted

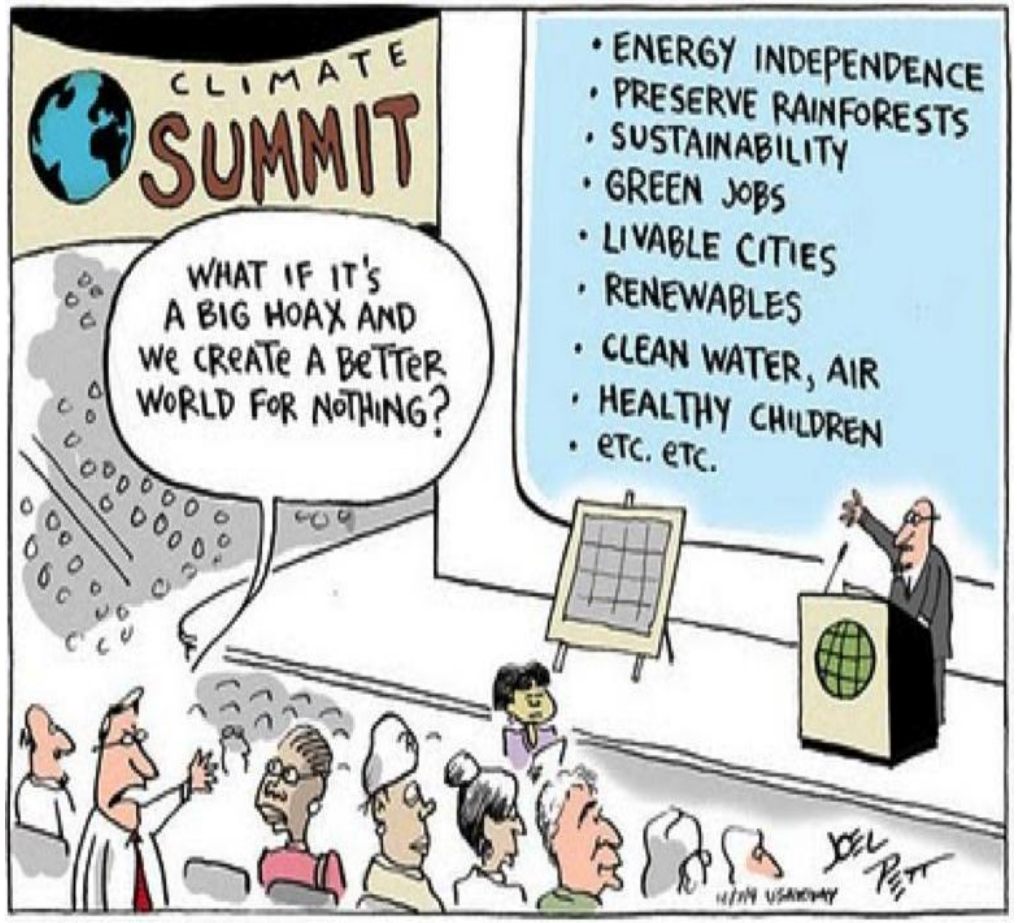
racking system anchored to ground, wired to building

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

Prepare for solar development in your community



Know your solar potential

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

Overall

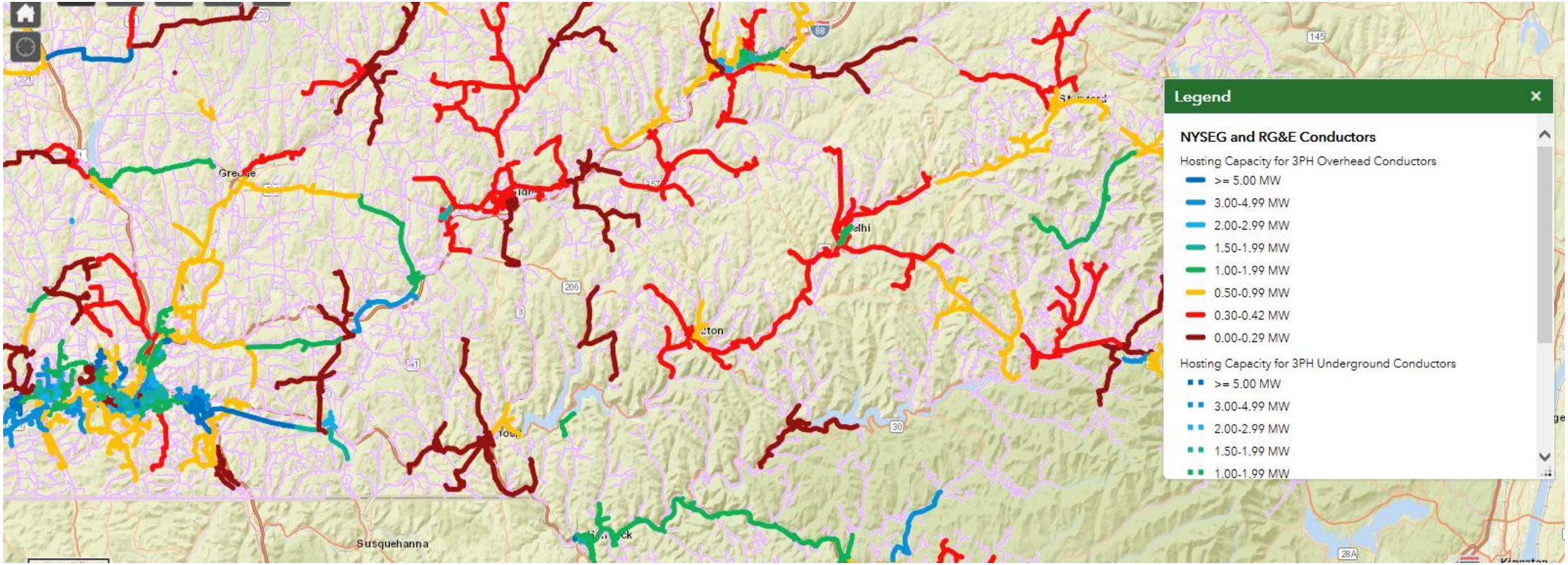
Total estimated size and solar electricity production of viable roofs for zip code 12210

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

Know your hosting capacity infrastructure



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

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

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

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

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

Private lease agreements

- Municipalities have no jurisdiction
- 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

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

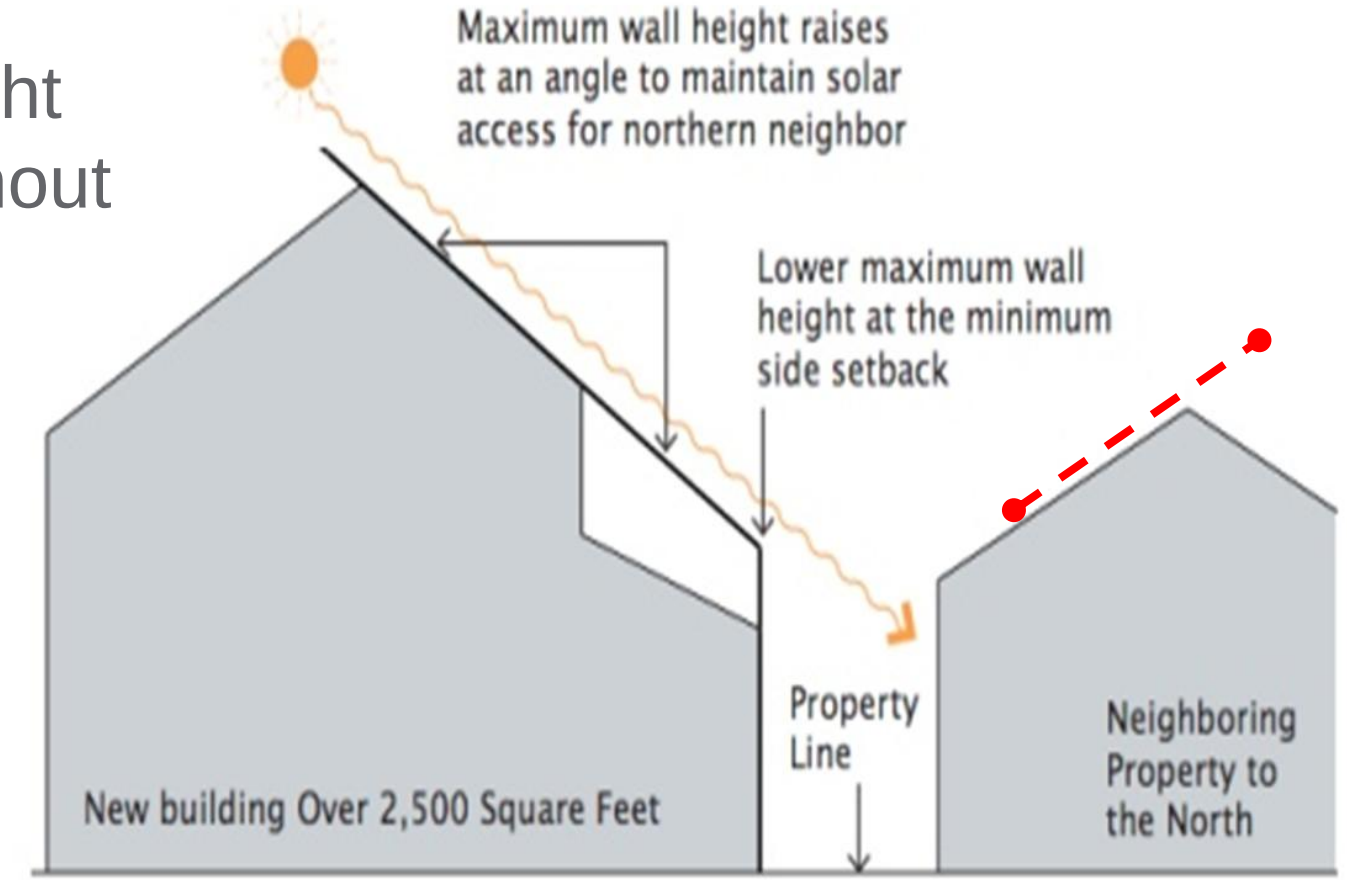
Zoning

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

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



Adopt solar language in code(s)

- 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

Zoning for Tier I systems

Residential

Commercial

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

Firefighter safety

- Primary Risks:
  - Electrocution
  - 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

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

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

Accessory use table

	Residential-1 (R1)	Residential-2 (R2)	Residential-3 (R3)	Commercial (C)	Industrial (I)	Public (P)
ACESSORY 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

Accessory use: Awning

Zoning for Tier II ground-mounted systems

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

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

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…"

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

Site plan review considerations, continued

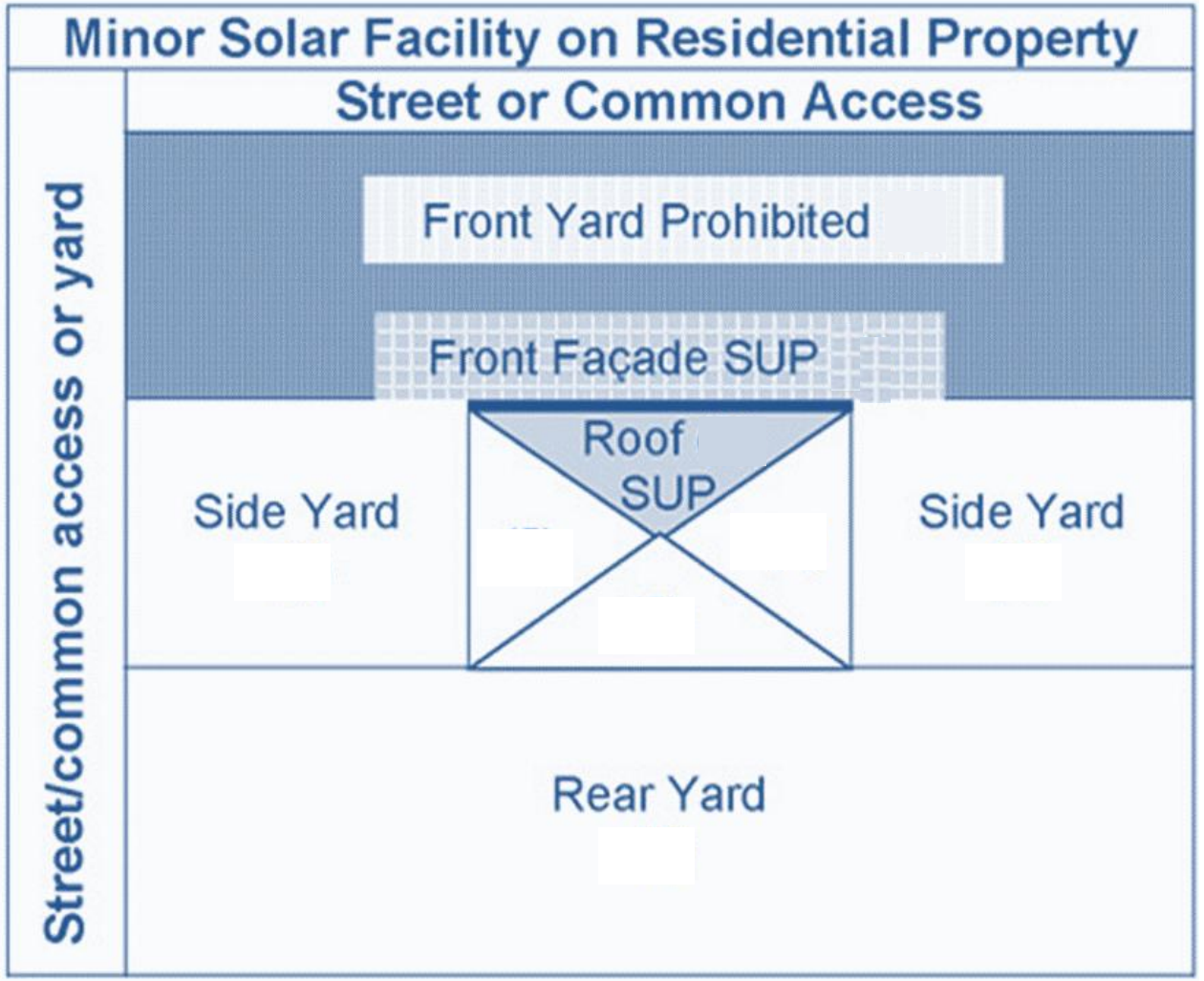
- Locations of active farmland and prime farmland soils, wetlands, permanently protected open space, Priority Habitat Areas and BioMap

- 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

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



Compatibility with neighborhood character

- Don’t negatively impact adjacent uses
- Visually compatible
- Use sensitivity, especially in areas containing unique architectural styles or historic structures

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

Solar panels on historic home Cambridge, MA

Minimize visibility

- Panels and mechanical equipment should be as unobtrusive as possible
- Not visible from public thoroughfare
- Compatible in color to established roof materials
- Hidden below and behind parapet walls and dormers, or on rear-facing roofs

a nearly invisible solar roof:

“thin-film” solar system atop standing seam metal roof

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?
- Is this the best use of the land?
- Special considerations for removal/decommissioning plans

Agricultural & environmental areas

Prohibit or avoid installation:

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

NYS Department of Agriculture & Markets:

- Guidelines for Agricultural Mitigation for Solar Energy Projects

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

Tier III solar installations

Potential benefits

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

Negative effects

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

More research is needed…

- Will project enhance or detract from farm viability?
- Consider amounts and types of farmland
- Short/long term benefits on food supply and security
- Effect of solar leasing on price and availability of farmland
- Likelihood that solar farm will return to agriculture

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 local restrictions in appropriate cases
- 60 days to deem application complete
- Final decision within 1 year for new projects; 6 months if modifying certain existing facilities

Long Island Solar Farm, 200 acres

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

Brookhaven, NY

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

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

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.

Existing viewshed

Proposed arrays

Tree buffer

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.

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.

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.

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

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

Performance bonds

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

- Town Law §277 Subdivision review

9. Performance bond or other security.

d. 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.

Decommissioning mechanisms

Non-financial tools

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

Decommissioning sample checklist

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

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.

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.

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 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

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
- NY SUN Solar PILOT Toolkit helps with PILOT agreements for Community Solar projects larger than 1 MW

Ownership options

- Direct: Residential customer owned system
  - Customer incurs all costs
  - Customer avoids energy costs
  - Net metering excess generation credits back to grid
  - Direct incentives through NY-Sun paid to your contractor
  - 30% Federal Income Tax Income Credit, 25% NY State Tax Credit not to exceed $5,000 for your Primary Residence

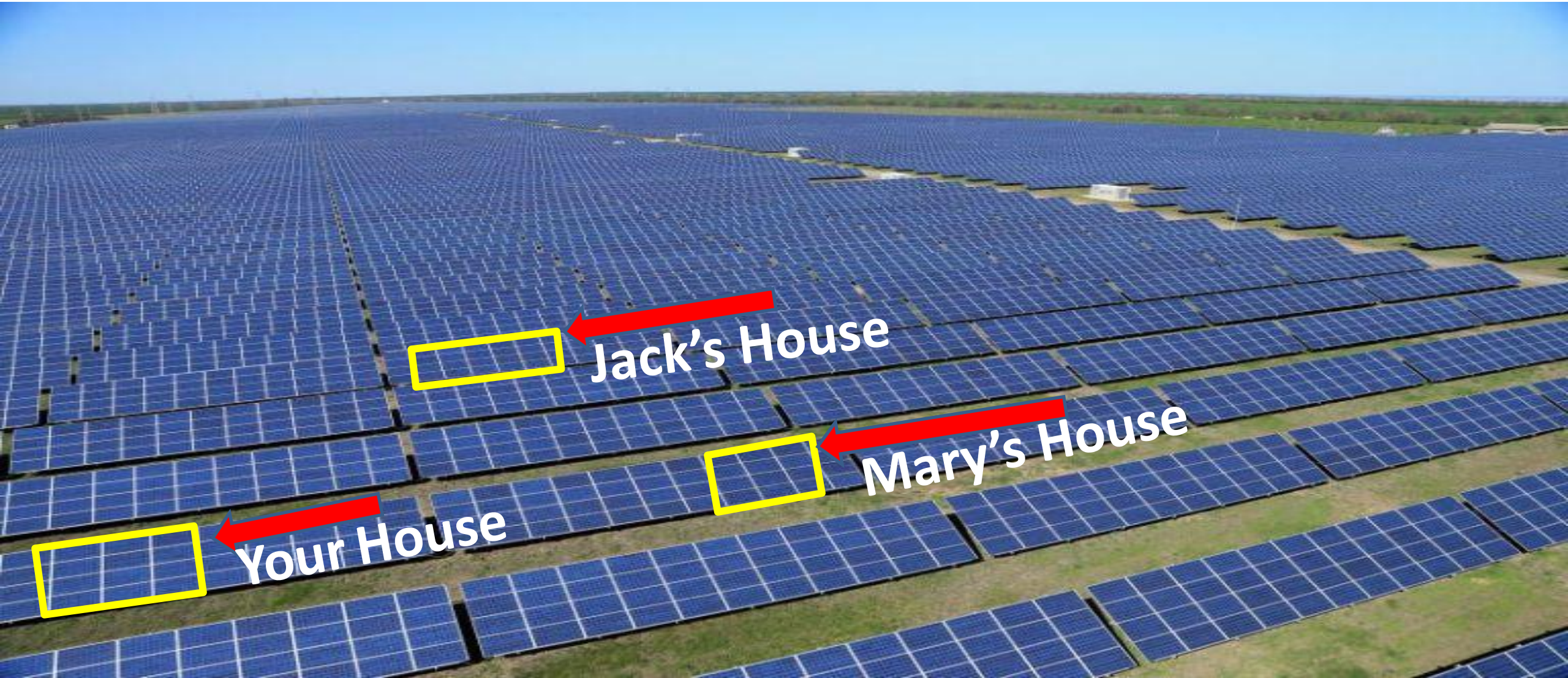
Ownership options

- Third-Party: Power purchase agreement between customer and developer
  - Investor receives 30% Federal Income Tax Credit, and Five Year accelerated deprecation. Customer receives 25% NY State Income Tax Credit
  - No upfront cost to customer, or costs operate and maintain system
  - Predictable payments, long term contracts

Group purchasing

- Often called:
  - solar bulk purchase, solar group purchase, SunShare, Solarize
- Consortium based on ‘economy of scale’
- Guides homeowners with joint purchase of solar systems
- NYSolar Smart Program, Sustainable CUNY
  - Solarize Huntington, Solarize Brooklyn CB6 and SunShare

Community solar



Energy Storage

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

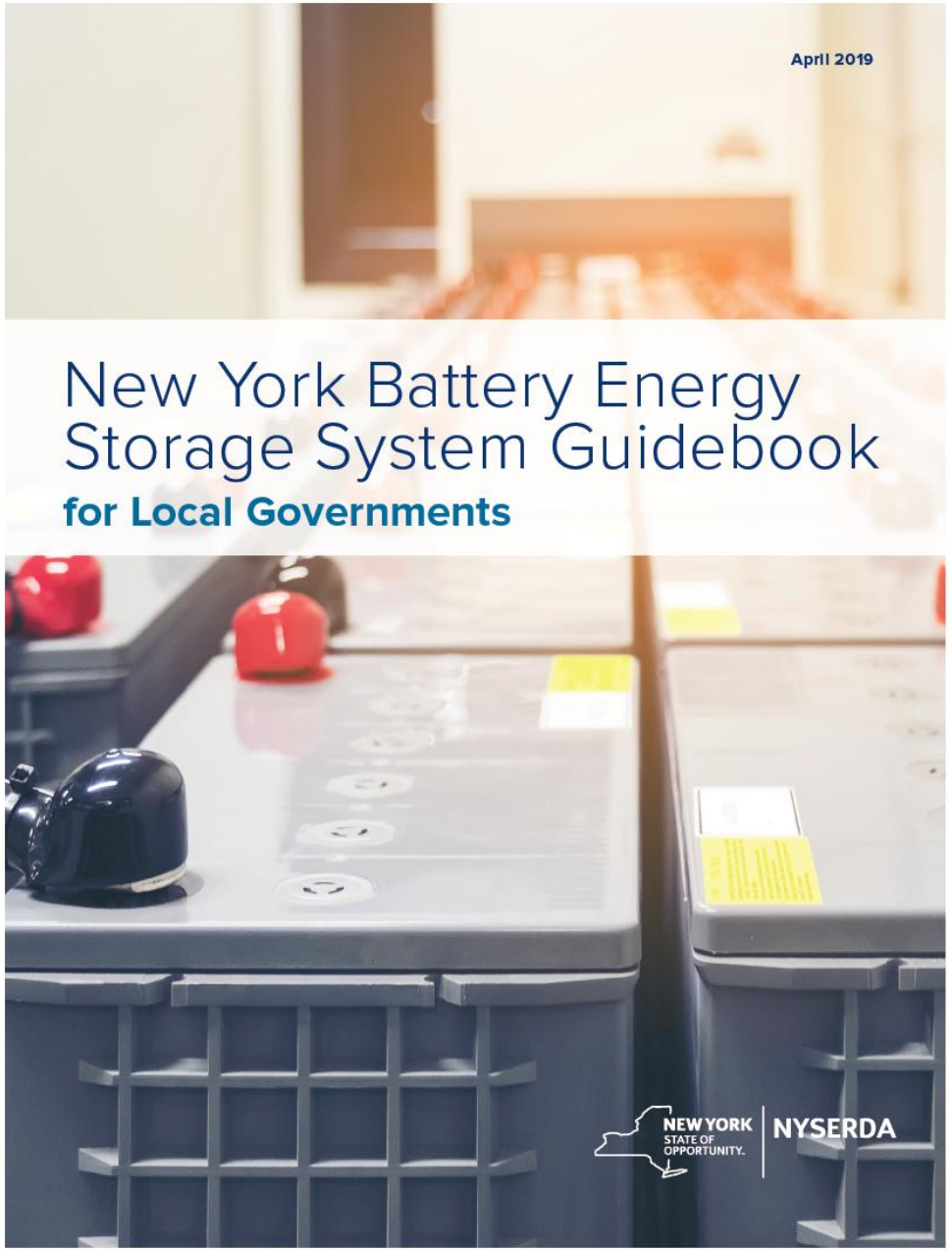
NYS State Energy Storage Initiative

- Overarching Goals:
  - Increase clean energy sources and storage
  - 100% Carbon free energy sector by 2040
  - Reduce CO_2 Emissions & impact of outages
  - Enable access to stored **solar** and **wind** power during peak usage periods
- Statewide Targets:
  - 1,500 MW energy storage by 2025
  - 3,000 MW energy storage by 2030

NY Battery Energy Storage System Guidebook

Three key resources for communities:

- Model Law
- Model Permit
- Inspection Checklist



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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(518) 473-3355

www.dos.ny.gov/lg/lut/index.html

NYS Energy Research & Development Authority

(518) 862-1090

www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Siting