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# Zoning for Solar Energy: Resource Guide

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NY-Sun PV Trainers Network

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## Acknowledgement

The Land Use Law Center at Pace Law School created the Land Use Planning for Solar Energy Resource Guide through its work under the NY-Sun PV Trainers Network. Established in 1993, the Land Use Law Center is dedicated to fostering the development of sustainable communities and regions through the promotion of innovative land use strategies and dispute resolution techniques. The Center thanks editorial consultant Meg Byerly Williams, student researchers Roisin Gorzewski and Marissa Weiss, and former student associate Radina Valova for their contributions to this resource guide.

## Contents

## Introduction

Despite their invention in the 20th century and countless technological advances since, many municipalities have not amended their zoning ordinances to allow and accommodate solar energy systems. From simple roof-mounted panels on single-family homes in the 1970s, solar energy has expanded to include materials integrated into buildings, small- and larger-scale, ground-mounted structures, and large-scale solar arrays or farms, as well as medium-scale, roof-mounted systems on large office and commercial buildings. Currently, local land use authorities may discourage solar energy projects because they are not clearly permitted under local zoning. As solar energy technology progresses and the economy requires cleaner, often cheaper, renewable fuels, it is imperative that local governments advance their economic development and sustainability plans by reviewing and amending local zoning laws to permit the types of solar energy systems that each community desires for its homeowners and businesses.

This document is designed to help New York State localities amend zoning and other land use regulations to permit the development of solar energy systems in their jurisdictions. While it applies to many types of solar energy systems, this resource guide focuses primarily on solar electric or photovoltaic (PV) systems. It begins by describing the local government's role in land use planning and regulation. It then discusses the importance of defining all solar energy systems that a community wants to allow in existing zoning districts and shows how to incorporate those definitions in the zoning ordinance. Next, the guide explains how a municipality can amend zoning to permit these systems either as principal, secondary, accessory, or specially permitted land uses in existing zoning districts, as well as how to exempt certain systems from zoning altogether. The resource then explains how relevant bulk and area requirements must be amended to accommodate permitted solar energy systems. Subsequently, the guide discusses how to amend site plan requirements to include standards for solar energy systems, examines how local governments can modify environmental impact review under SEQRA, and considers the role of other local boards in streamlining the approval process for solar energy systems. Beyond permitting solar energy systems, the guide discusses ways to amend land use laws to either require or encourage them. Throughout, this document provides helpful resources and examples that communities can use when regulating to allow, encourage, or require various solar energy systems. Although land use terminology may vary by regional and jurisdictional practice, the examples generally represent approaches discussed throughout the guide. The examples are intended to be illustrative samples and are not intended to be an endorsement of the content.

## 1. The Role of Local Governments in Planning & Zoning for Solar Energy

Although both the federal and state levels of government have a strong interest in encouraging the deployment of renewable energy systems, the power to permit solar energy systems under land use law has been delegated by most states to local villages, towns, and cities. This is the case in a home-rule state like New York where state

objectives involving land use, with few exceptions, are accomplished only in cooperation with local governments. It is New York State policy to defer to local discretion in these matters, allowing local policy makers to determine the types of renewable energy systems they want to permit and encourage and helping them accomplish their goals. Local governments do this by utilizing the tools and strategies made available to villages, towns, and cities under the local land use system.

Approximately 1,600 local governments exist in New York. All of them enjoy the discretion and power to adopt comprehensive land use plans, zoning, and land use laws and to establish a variety of local land use boards to administer land use controls, including planning boards, zoning boards of appeal, and special boards for historic preservation, environmental conservation, and architectural review. The land use system's legal framers intended localities to adopt comprehensive plans first, followed by the adoption of zoning provisions that carry out a plan's goals and objectives and that establish and designate the proper role for land use boards. Under New York law, land use regulations must conform to local comprehensive plans, and local boards cannot act if not empowered to permit certain land uses, subject to legislated standards.

Local officials who want to encourage solar energy systems should adjust the local land use system by first adding a solar energy component to the comprehensive plan or adopting a special solar energy policy or plan to guide the reform of land use regulations. To help accomplish this, the NY-Sun PV Trainers Network offers a planning workshop featuring the Land Use Planning for Solar Energy resource guide, which describes how NYS localities can develop and adopt solar friendly policies and plans. This guide highlights the Land Use Law Center's model Resolution Supporting Implementation of a Solar Energy Program, a comprehensive policy statement that municipalities can adopt. The resolution includes relevant findings, authorizes a task force to conduct research and report recommendations to city council, and lists potential techniques a locality should consider during this process.

After adopting a solar energy policy and plan, local governments can amend zoning regulations to permit and encourage these systems. Most New York municipalities have adopted zoning ordinances that establish various zoning districts within which certain land uses are allowed as principal, accessory, secondary, or specially permitted uses. If a land use, such as a certain type of solar energy system, is not permitted in a zoning district, it is prohibited unless the zoning board of appeals issues a use variance. Use variances are subject to strict state-established standards and are very difficult to obtain.

For each district, zoning must specify land uses allowed and set density, bulk, and area requirements, as well as other applicable standards. To further regulate land development, local governments may adopt site plan and subdivision regulations to supplement zoning law prescriptions. Site plan regulations allow administrative agencies, usually the planning board, to review and approve specific site design and features and adjust them to mitigate their impact on the neighborhood and community. Subdivision regulations require the submission of a plat or map of a proposed

subdivision, showing layout and approximate dimensions for roads, sewers, water systems, and other important features, for similar approval.

When adopting a zoning ordinance, the local legislature must create a zoning board of appeals to review the zoning administrator's decisions and respond to requests for variances. Additionally, local legislatures often create planning boards to review site plan, subdivision, and other land use applications. A municipality's building department approves building permit applications to ensure construction accords with State building codes, and depending on local circumstances, the local legislature may create other boards to review land development applications, ensuring proposed projects do not harm historic, architectural, or natural resources. New York's State Environmental Quality Review Act (SEQRA) further adds to the land use process, requiring local boards to determine whether certain proposed local actions will have significant adverse environmental impacts and to consider alternatives and impose conditions to avoid or mitigate any impacts.

Zoning ordinances typically require the local building inspector or a designated building department officer to serve as the Zoning Enforcement Officer (ZEO). Under this charge, the ZEO must know the zoning ordinance thoroughly, offer formal zoning interpretations as applied to proposed projects, and determine whether adopted land use regulations permit an applicant's project, as well as the process an applicant must follow to secure required approvals. When a homeowner, business entrepreneur, or developer proposes a solar energy system installation on an existing building or on its surrounding lot, the ZEO must determine whether zoning permits the system, the type of land use the system is, and the requirements it must meet. Because the ZEO must disapprove all land uses not permitted in zoning, it is important for the local legislature to determine which solar energy systems it wants to permit, define these systems, add those definitions to the zoning ordinance, ensure that each defined system is a permitted land use in zoning, and make sure that a local board is designated to approve that use. Below, this resource shows how local governments can amend zoning and other land use regulations to allow and accommodate solar energy systems. For more information about the local land use system and how it operates, consult the resources highlighted below.

***Resource: NY DOS James E. Coon Technical Series***

The NY Department of State Division of Local Government Services offers the James E. Coon Technical Series of short guides on a range of planning and zoning topics for New York municipalities. Guide titles include Adopting Zoning for the First Time, Creating the Community You Want: Options for Land Use Control, Governmental Immunity from Zoning, a Guide to Planning and Zoning Laws of New York State, Land Use Moratoria, Local Open Space Planning Guide, Questions for the Analysis and Evaluation of Existing Zoning Regulations, Record Keeping Tips for Zoning Administration, Site Plan Review, Subdivision Review in New York State, Transfer of Development Rights, Zoning Board of Appeals, Zoning and the Comprehensive Plan, and Zoning Enforcement. To access this series, visit http://www.dos.ny.gov/lg/publications.html.

***Resource: New York Planning Federation's Planning and Zoning Training Series***

The NYPF provides specialized training opportunities for New York municipalities, including a Planning and Zoning Series that offers five trainings: a land use training session on the basics of local land use regulation for planning and zoning boards and others; an advanced land use training session focused on specific community needs; an environmental review training that covers SEQRA requirements and the role of municipal boards and coordination with local planning and land use regulations; a comprehensive plan primer that presents the benefits and content of a comprehensive plan; and a subdivision training that covers the basics of subdivision review, as well as new techniques for creative development. For more information, visit http://www.nypf.org/editable/training.html.

***Resource: Well Grounded***

Well Grounded: Using Local Land Use Authority to Achieve Smart Growth is an easy-to-use and practical reference for land use officials and professionals, academics, and citizens who wish to better understand New York State's remarkable land use regime. It places land use practice into the national perspective of sprawl and smart growth by comprehensively describing one of the nation's most complete state land use regimes. Well Grounded covers the history of land use practice from its evolution in 1916 and describes the political history of land use law in New York. Each chapter provides basic definitions of all topics before delving into more complicated applications of them. To order a copy of Well Grounded, visit http://www.law.pace.edu/center-publications.

***Resource: The Zoning School***

Created in 1999 by the Land Use Law Center for the New York Municipal Insurance Reciprocal (NYMIR), The Zoning School is a land use training program for local officials. Local governments can self-certify their boards after a majority of a board's members have satisfactorily completed five of the program's nine lessons. Each lesson covers a different aspect of law and practice applicable to the work of local land use boards. The tutorials include Zoning—the Basics, Comprehensive Planning, Subdivision Approval, Site Plan Approvals and Conditions, Variances, Special Use Permits and Permit Conditions, Environmental Review, Local Boards, and Strategic Local Laws. To learn more about The Zoning School, go to http://www.law.pace.edu/zoning-school.

## 2. Defining Solar Energy Systems in the Zoning Code

### *2.1 Important Role of Zoning Definitions in Regulating Solar Energy Systems*

Typically, a zoning code has a section called "definitions" that defines all land uses permitted in any zoning district in the community. To properly permit and regulate solar energy systems, the zoning code must include definitions that delineate each type of system that the community wishes to permit. Generally, solar energy systems transform energy from sunlight into electricity or heat using specialized electrical or mechanical equipment that varies greatly in type, shape, size, and capacity from system to system. For example, solar photovoltaic systems create electricity from solar energy using photovoltaic cells in rooftop or ground-installed panels or incorporated into building

materials. Similarly, solar thermal systems use radiant heat from the sun to warm fluids in a series of tubes or panels that are typically roof-mounted to heat water or cool and/or heat buildings.

Because solar energy systems vary greatly in size and shape, they require varying levels of review depending on magnitude of impacts. A municipality should amend its zoning ordinance to include a definition for each type of solar energy system it wishes to allow and regulate. After drafting clear zoning definitions, the municipality must determine where to permit and how to regulate each defined system in the zoning code, as each must be subject to clear standards and have an appropriate required approval process or exemption.

### *2.2 Using Solar Energy System Factors to Determine Zoning Definitions*

Since solar energy systems vary significantly by type, location of usage, size, and energy capacity, zoning definitions generally are based on these factors. Once a municipality determines the various solar energy systems it wants to permit, these systems can be categorized into several different zoning definitions using these factors. In particular, local governments should use these factors to organize solar energy systems according to their impacts on land and neighboring properties, thus enabling stricter standards and review processes for systems with higher impacts.

The number of factors used to create zoning definitions varies among municipalities. Sometimes definitions are very simple, using a single factor to differentiate between systems, such as distinguishing between system types. For example, a community might permit roof-mounted systems but choose to prohibit ground-mounted systems in some residential districts. Alternatively, zoning definitions can use many factors to define several solar energy system categories. The four factors municipalities consider when creating zoning definitions include:

1. Energy system type,
2. Location where system-produced energy is used,
3. Size and shape of the system, and
4. System energy capacity.

These factors are described in more detail below:

#### *System Type*

A municipality may create zoning definitions for solar energy systems based on the system type. Many types of systems exist; however, most municipalities distinguish among three types of solar energy systems: (1) roof- or building-mounted, (2) ground-mounted or freestanding, and (3) building-integrated.

- Roof- or building-mounted solar energy systems are attached to the top of a building or structure. Generally, a roof-mounted system is secured using racking

systems that minimize impacts and is mounted either level with the roof or tilted toward the sun.

- Ground-mounted or freestanding solar energy systems are installed directly in the ground and not attached to any existing structure. Single or multiple panels can be mounted on individual or multiple poles when space, structural, shade, or other constraints inhibit roof-mounted systems. Much larger freestanding systems, including solar farms, can be constructed on the ground.

- Finally, building-integrated solar energy systems are incorporated into a building or structure rather than existing as separate equipment. Building-integrated systems are used as a structural component of the building, such as a roofing system or building façade. This can include roof shingles or tiles, laminates, glass, semi-transparent skylights, awnings, and fixed awnings. As a rule, zoning usually does not include definitions for building materials because the building code is responsible for their regulation, but municipalities may include zoning definitions for building-integrated solar energy systems to clarify differences in approval process requirements for the different system types.

Municipalities should take care when defining solar energy systems based on type, as ground-mounted systems are often associated with large impacts and the size of both roof- and ground-mounted systems influences their effect on surrounding properties.

***Example: Penn Future Solar Zoning Ordinance***
Penn Future's Western PA Rooftop Solar Challenge Final Solar Zoning Ordinance provides an example of solar energy systems defined based on type. The ordinance defines a "building-mounted system" as one "attached to any part or type of roof on a building or structure that has an occupancy permit . . . and that is either the principal structure or an accessory structure . . . ." Additionally, the ordinance defines a "ground-mounted system" as one "mounted on a structure, pole or series of poles constructed specifically to support the photovoltaic system and not attached to any other structure" and defines a "building-integrated system," in part, as one "constructed as an integral part of a principal or accessory building or structure and where the building-integrated system features maintain a uniform profile or surface of vertical walls, window openings, and roofing." To view the entire Penn Future model ordinance, visit http://www.pennfuture.org/SunShot/SunSHOT_Ord_Zoning.pdf.

### *Energy Usage*

Municipalities also consider where system-produced energy is utilized when defining solar energy systems in zoning. For example, Solar PV systems produce electrical energy that is used in three ways: (1) onsite, (2) offsite, or (3) both onsite and offsite. Onsite generation occurs when the energy produced serves only the property owner, occupant, or onsite facilities. An onsite solar PV system primarily provides electricity to one property, rather than multiple parcels. Solar PV systems that generate electrical power for offsite use export all PV-system produced electricity to a utility to help meet its customers' energy demand. A solar PV system must be interconnected with the

electrical grid to transfer energy onto the grid to a utility. Once interconnected, both onsite and offsite solar PV systems may sell excess PV-system generated electricity back to the grid through a process called net-metering. Solar energy systems that generate power for onsite and offsite use serve the property owner, occupant, and/or onsite facilities, as well as offsite customers. Generally, systems that serve onsite uses are smaller and sited on residential or small commercial properties as accessory uses, and systems that serve offsite uses are utility-scale solar farms sited on industrial parcels as the principal use. Solar energy systems that serve both onsite and offsite uses are often medium-sized systems sited on commercial or agricultural parcels designed to provide additional revenues. Although these generalities typically hold true, municipalities should proceed carefully when using this factor to define solar energy systems, as location of energy usage does not always correlate directly with land use impacts.

***Example: Casco Township, ME***
Casco Township's zoning ordinance includes solar energy provisions that define solar energy systems, in part, based on energy usage. For example, small solar energy systems "produce utility power primarily to on-site users or customers," medium systems "produce utility power to on-site uses and off-site customers," and large systems "produce utility power to off-site customers." For more information about these regulations, visit https://www.planning.org/pas/infopackets/open/pdf/30revpart13.pdf.

***Bulk & Area***

Zoning may define solar energy systems according to their physical size using measurements similar to those found in the zoning ordinance's bulk and area requirements. Typically, bulk and area standards limit the size of a system using a minimum or maximum footprint or disturbance zone measured in acres, square feet, percent lot coverage, or percent of the primary structure's footprint.

***Example: Template Solar Energy Development Ordinance for NC***
The Template Solar Energy Development Ordinance for North Carolina defines solar energy systems, in part, based on their physical size measured in acres. According to the state's model ordinance, Level 1 Solar Energy Systems include those that are "ground-mounted on an area of up to 50 [percent] of the footprint of the primary structure on the parcel but no more than [one] acre," and Level 2 Solar Energy Systems are ground-mounted systems with a footprint of less than or equal to a half acre in residential districts, less than or equal to 10 acres in general commercial business and office-institutional districts, and of any size in industrial districts. Finally, solar energy systems that do not satisfy the parameters for Level 1 or 2 systems are designated as Level 3 Solar Energy Systems. For more information about this template ordinance, visit http://nccleantech.ncsu.edu/wp-content/uploads/Template-Solar-Ordinance_V1.0_12-18-13.pdf.

### *Energy Capacity*

Often, municipalities define solar energy systems based on energy capacity because the physical size of a solar energy system generally increases as kilowatts produced increases. Further, communities often use energy usage metrics to define solar energy systems because many grants are available based on how much energy a system produces. For example, the NY-Sun Initiative provides incentives to help reduce installation costs associated with solar electric systems up to 25 kilowatt (kW) for residential applications and up to 200 kW for nonresidential applications (larger multi-unit buildings, schools, non-profits, and government) in most of New York State. When defining systems using energy capacity as a factor, zoning definitions delineate the systems based on a minimum or maximum generating capacity, rated capacity, or rated storage volume, all measured in kilowatts (kW) or kilowatts per hour (kW/hour). When considering whether to define systems based on energy capacity, local governments should keep in mind that solar PV technology will change over time, increasing panel efficiencies so that kW output will not necessarily correlate with system size and land use impacts in the future.

***Example: Worcester County, MD***

In its alternative energy facilities regulation, Worcester County defines solar energy systems, in part, based on energy capacity. It defines large solar energy systems as those with a rated capacity of two hundred kilowatts or greater. Medium solar energy systems are ground-mounted systems with a rated capacity greater than five kilowatts but less than two hundred kilowatts or roof-mounted systems of any capacity in excess of five kilowatts. Finally, small solar energy systems have a rated capacity of five kilowatts or less. Worcester County, M.D., Code § ZS 1-344.

***Example: Model As-of-Right Zoning Bylaw: Allowing Use of Large-Scale Ground-Mounted Solar PV Installations***

The Massachusetts Executive Office of Environmental Affairs' Department of Energy Resources developed a model zoning bylaw that defines large-scale ground-mounted solar photovoltaic installation as solar photovoltaic systems that are structurally mounted on the ground (not roof-mounted) that have a minimum nameplate capacity of 250 kW DC. For more information about the model bylaw, visit http://www.mass.gov/eea/docs/doer/green-communities/grant-program/solar-model-bylaw.pdf.

## *2.3 Example Zoning Definitions for Solar Energy Systems*

Below, several local and model examples are listed to demonstrate a variety zoning definitions that use the factors described above to define solar energy systems. Although land use terminology varies by regional and jurisdictional practice, these examples generally represent the approaches discussed above.

***Example: DVRPC Renewable Energy Ordinance Frameworks***
***Factor Used—System Type***
The DVRPC Renewable Energy Ordinance Frameworks define building-integrated photovoltaic (BIPV) systems as systems that integrate solar PV modules into the building envelope, where the solar panels themselves act as a building material (roof shingles) or structural element (i.e., façade). The frameworks define ground-mounted systems as those that are not mounted on existing structures. To access the ordinance frameworks, go to http://www.dvrpc.org/EnergyClimate/ModelOrdinance/Solar/pdf/2012-11-30_AEOWGSolarFrameworkFINAL.pdf.

***Example: Kent County, MD***
***Factor Used—Energy Usage***
Kent County's Renewable Energy Task Force released recommendations for regulating renewable energy systems, including suggested land use ordinance language for solar energy systems. The recommendations suggested defining utility-scale solar energy systems as any device that relies upon direct sunlight as an energy source, including but not limited to any device that collects sunlight to generate energy primarily for use offsite. Small solar energy systems are defined as any device that relies upon direct sunlight as an energy source, including but not limited to any device that collects sunlight to generate energy for use onsite. The small system definition allows energy to be delivered to a power grid to offset the cost of energy on site. To access these recommendations, go to http://www.kentcounty.com/gov/planzone/RETF_WHITE_PAPER_Final.pdf.

***Example: Goodhue County, MN***
***Factors Used—System Type and Energy Usage***
Goodhue County adopted solar energy system (SES) regulations in Article 19 of its zoning ordinance. These regulations define a ground-mounted SES as a solar collector located on the ground surface that is physically affixed or attached to the ground, including pole-mounted systems. The regulations define a roof-mounted SES as a solar collector located on the roof of a building or structure that may be physically affixed or attached to the roof. For both ground-mounted and roof-mounted SESs, the regulations include sub-definitions for residential, commercial, and utility scale SESs. The regulations define a residential SES as accessory to the primary use of the land, designed to supply energy for onsite residential use with excess energy sold back to the grid through net metering. A commercial SES is defined as accessory to a permitted farm or business use of the land, designed to generate energy to offset utility costs or as an additional revenue stream. Finally, the utility Scale SES is defined as an energy system that is the primary use of the land, designed to provide energy primarily to offsite uses or for export to the wholesale market. Goodhue County, M.N., Zoning Ordinance Art. 19, *available at* http://www.co.goodhue.mn.us/DocumentCenter/View/2428.

***Example: Model Ordinances for Solar Energy Projects in Virginia***
***Factors Used—System Type and Bulk & Area***
A local government outreach group convened by the Virginia Department of Environmental Quality developed two model zoning ordinances, one for smaller-scale solar energy projects and one for larger-scale projects. These ordinances define both

smaller-scale and larger-scale projects as those that (1) generate electricity from sunlight using one or more photovoltaic systems and other appurtenant structures and facilities onsite OR (2) utilize sunlight as an energy source to heat or cool buildings or water or produce electrical or mechanical power by collecting, transferring, and/or converting solar-generated energy. The definitions also delineate how these projects differ. A smaller-scale project is defined as one that (1) has a disturbance zone equal to or less than two acres, (2) is mounted on or over a building or parking lot or other previously-disturbed area, OR (3) utilizes integrated photovoltaics only. A larger-scale project is defined as any solar energy project that does not meet these criteria. For more information about the model ordinances, go to http://www.deq.virginia.gov/Programs/RenewableEnergy/ModelOrdinances.aspx.

***Example: Village of Croton-on-Hudson, NY***
***Factors Used—System Type and Energy Capacity***

Croton adopted the NY-Sun Unified Solar Permit (USP), a combined building and electrical permit for certain solar energy systems developed by the New York State Energy Research and Development Authority (NYSERDA), the New York Power Authority (NYPA), and the City University of New York's Sustainable CUNY. The USP expedites the permitting process for "small-scale solar electric systems," that have a rated capacity of 12 kW or less and that are installed on a permitted roof structure of a building, or on a legal accessory structure, among other requirements. The USP streamlines the permitting process for small-scale solar electric systems, requiring permit determinations to be issued within 14 days of complete application submission. USP-eligible systems are subject to building and electrical code review but are exempt from any zoning requirement. To view Croton's USP application, go to http://www.crotononhudson-ny.gov/Public_Documents/CrotonHudsonNY_Engr/Application-UnifiedSolarPermitfinal.pdf.

***Example: Casco Township, ME***
***Factors Used—System Type, Energy Usage, and Bulk & Area***

Casco Township passed Ordinance #30-83 to add provisions addressing small, medium, and large solar energy systems in its zoning ordinance. The ordinance defines small solar energy systems as single residential or small business-scale solar energy conversion systems consisting of roof panels, ground-mounted solar arrays, or other solar energy fixtures, and associated control or conversion electronics, occupying no more than one-half acre of land and that produce utility power primarily to onsite users or customers. Medium solar energy systems are defined as private onsite or utility-scale solar energy conversion systems with many ground-mounted solar arrays in rows or roof panels, and associated control or conversion electronics, occupying more than one-half acre but no more than ten acres of land and that produce utility power to onsite and offsite customers. Finally, the ordinance defines large solar energy systems as utility-scale solar energy conversion systems with many ground-mounted solar arrays in rows, and associated control or conversion electronics, occupying more than ten acres of land and that produce utility power to offsite customers. To access this ordinance, go to https://www.planning.org/pas/infopackets/open/pdf/30revpart13.pdf.

***Example: Town of New Hartford, NY***
***Factors Used—System Type, Energy Usage, and Energy Capacity***
The Town of New Hartford's solar energy system regulation defines freestanding or ground-mounted solar energy systems as those directly installed in the ground and not attached or affixed to an existing structure. Rooftop mounted or building mounted systems are defined as those with solar panels mounted on top of a roof structure either as a flush-mounted system or modules fixed to frames that can be tilted toward the south at an optimal angle. The regulation defines small-scale solar as solar photovoltaic systems rated up to 10 kW per hour of energy or solar thermal systems that serve the building to which they are attached. Town of New Hartford, N.Y., Code § 118-74.

***Example: Worcester County, MD***
***Factors Used—System Type, Energy Usage, and Energy Capacity***
Worcester County's alternative energy facilities regulation defines large, medium, and small solar energy systems. Large solar energy systems are ground-mounted with a rated capacity of 200 kW or greater and with a principal purpose to provide electrical power for sale to the general power grid. Medium solar energy systems are ground-mounted systems with a rated capacity greater than 5 kW but less than 200 kW or a roof-mounted system of any capacity in excess of 5 kW and serving, or designed to serve, any agricultural, residential, commercial, institutional, or industrial use on a single lot or parcel or group of adjacent lots or parcels. Lastly, small solar energy systems have a rated capacity of 5 kW or less and serve, or are designed to serve, any agricultural, residential, commercial, institutional, or industrial use on a single parcel or lot. The small solar energy system definition further states that individual or small groups of photovoltaic cells that are attached to and used to directly power or charge a battery for an individual device such as a light fixture, fence charger, radio, or water pump are not considered a small energy power generation facility and may be used in any zoning district without regard to lot or setback requirements. Worcester County, M.D., Code § ZS 1-344.

***Example: Model Small-Scale Solar Siting Ordinance***
***Factors Used—System Type, Energy Usage, and Energy Capacity***
Columbia Law School's Center for Climate Change Law developed the Model Small-Scale Solar Siting Ordinance, which includes several helpful solar energy system definitions. The model ordinance defines building-integrated photovoltaic (BIPV) systems as those that integrate photovoltaic modules into the building structure, such as the roof or façade, but which do not alter roof relief. The model defines freestanding or ground-mounted solar energy systems as those directly installed in the ground and not attached or affixed to an existing structure and defines rooftop or building mounted solar energy systems as those mounted on top of a structure or roof as a flush-mounted system or as modules fixed to frames that can be tilted toward the south at an optimal angle. Finally, the model ordinance defines small-scale solar as solar photovoltaic systems that produce up to ten kW per hour of energy or solar-thermal systems that serve the building to which they are attached and that do not provide energy for any other buildings. To access this model ordinance, go to http://web.law.columbia.edu/sites/default/files/microsites/climate-

change/files/Resources/Model-Ordinances/Model-Small-Scale/Model%20ordinance%20Solar%20v%207.pdf.

# 3. Updating Zoning Codes

After creating solar energy system definitions for the zoning code, a municipality must determine in which zoning districts to permit each defined system, as well as how to permit each system and appropriate amendments for bulk & area requirements to accommodate these systems. In most zoning codes, the local government must modify the Article that creates zoning districts by adding defined solar energy systems to the list of permitted uses for each district and by amending dimensional requirements in the bulk and area schedule for each permitted system. In some zoning codes there is an Article on Supplemental Regulations where these can be added.

## *3.1 Adding Defined Solar Energy Systems to Appropriate Zoning Districts*

First, the municipality must decide in which zoning districts to permit each defined solar energy system. Generally, municipalities allow various types of systems in residential, agricultural, commercial, industrial, and mixed-use districts based on their impacts on surrounding properties.

When amending an existing zoning district to allow solar energy systems, defined systems are added as new land uses listed in the district's use regulations. Use regulations in zoning categorize allowed land uses as principal, accessory, secondary, or special. A principal use is allowed as-of-right on a parcel, while accessory uses are allowed on the parcel if they serve the principal use while being subordinate, incidental to, and customarily found in connection with that principal use. In contrast to an accessory use, a secondary use is another use on a parcel that is not a subordinate use; instead, it rises to the level of a second principal use and is also allowed as-of-right. Finally, a special use is a principal use of the land that is not as-of-right. Special uses must meet certain conditions and undergo a special use approval process before they are permitted. When updating use regulations in zoning to include solar energy, a municipality should add each defined solar energy system as one of these use types in appropriate zoning districts. Below, the four use types are described further as they relate to solar energy systems.

### *Principal Use*

For each district, zoning lists certain uses as principal uses of land that are permitted as-of-right. In most municipalities, one principal use is permitted on each building site. Typically, a solar energy system is considered a principal use when most or all of the energy it produces is consumed offsite. Often, such a system consists of a large-scale, ground-mounted solar field, raising concerns regarding land disturbance, increased impervious surface, and aesthetic consequences. Large solar farms with greater impacts usually are permitted only in industrial, agricultural, or similar districts.

### *Accessory Use*

A solar energy system is an accessory use when it generates power solely for onsite use to benefit the principal use of the land. Accessory uses exist on the same lot as the principal use and are subordinate, incidental to, and customarily found in connection with the principal use. Often, a solar energy system that is an accessory use or structure is small-scale, roof- or ground-mounted system designed to supply energy for a principal use on a residential, commercial, or mixed-use parcel. A municipality may expressly list solar energy systems as accessory uses or structures in particular districts or choose to allow these systems in all zones because they meet the qualifications of the municipality's general definition for accessory uses, which states that accessory uses are customary, incidental, and subordinate to the principal use. For example, New Rochelle, New York, allows certain small-scale, roof-mounted systems as accessory uses under the City's general accessory use definition. Solar energy collectors on one- or two-family dwellings, as well as those that cover less than 1,000 square feet of the roof area of other buildings, require only a building permit.

### *Secondary Use*

A solar energy system is a secondary use if it provides energy mostly for onsite uses but ships some offsite. Usually, a system is deemed a secondary use requiring more oversight when it is installed separately as a second use on the same lot as the principal use and exports over a certain threshold amount of power to offsite uses. For example, a medium-scale system sited on a commercial or agricultural parcel might be a secondary use if it provides solar energy for the onsite, principal use while shipping a significant amount of energy offsite to generate additional revenues.

### *Special Use*

Where appropriate, zoning can designate a solar energy system as a special use requiring a special use permit issued by a local board. In these cases, the special use is a principal use allowed but conditioned upon compliance with specific requirements imposed to limit any negative effects on adjacent properties and the community. For example, a municipality may require special use permits to ensure screening or noise attenuation of certain solar energy systems in sensitive locations. If an applicant can demonstrate conclusively that the project complies with all conditions and no negative impact will result, the special use permit usually is granted.

## *3.2 Land Use Review Options for Solar Energy Systems*

Zoning codes contain provisions that subject various land use proposals to a review and approval process involving local administrative officials and land use boards. The local legislature is responsible for zoning code amendments to permit various types of solar energy systems. In most cases, the planning board or commission is responsible for review and approval of special use permits, as well as site plan and subdivision applications, involving solar energy systems; in some cases the zoning board of appeals may be the approval body. Zoning code provisions that express project review

and approval requirements generally intensify as impacts associated with permitted solar energy systems increase. For example, smaller systems with few or no land use impacts may be exempt from review or enjoy a streamlined administrative review process with fewer standards, while larger systems require a more rigorous, time-consuming, and intense review process before one or more local boards.

Because they have few or no land use impacts, municipalities often "exempt" building-integrated solar energy systems from board review, requiring only a building permit. As a component of the principal use, building-integrated systems are subject only to building code compliance. In these cases, the application is approved administratively through the building permit process, in which the building inspector ensures compliance with the building, electrical, and other codes. The review process is similarly uncomplicated for small-scale systems that are accessory uses or structures, such as a roof-mounted system on a house in a residential district. Small-scale systems allowed as accessory uses generally require review by the zoning enforcement officer to ensure that the system complies with relevant use, bulk and area, and other relevant zoning requirements. If compliant, such systems are approved administratively through the building permit process.

To streamline the review process for small-scale, roof-mounted solar energy systems, municipalities can adopt the NY-Sun Unified Solar Permit (USP), which expedites the process to obtain a building permit. If a system qualifies for the Unified Solar Permit, the building department runs it through an accelerated, 14-day approval process. The USP is based in part on a similar unified solar permitting process developed by the Long Island Unified Solar Permitting Initiative (LIUSPI). Several Long Island municipalities have adopted LIUSPI's Solar Energy System Fast Track Permit Application, which waives or imposes minimal application fees and provides permit determinations within 14 days of complete application submittals for "standard" residential solar electric and solar hot water systems. For more information about the USP and the LIUSPI application, see the resource box below.

***Resource: NY-Sun Unified Solar Permit***

The New York State Energy Research and Development Authority (NYSERDA), New York Power Authority (NYPA) and City University of New York's Sustainable CUNY developed the Unified Solar Permit (USP) to reduce costs for solar projects by streamlining municipal permitting processes. Municipalities can adopt the USP, part of Governor Cuomo's NY-Sun initiative, to expedite the time it takes qualifying solar energy systems to obtain a combined building and electrical permit for a grid-tied system. To be eligible, systems must have a rated capacity of 12 kW or less, cannot be subject to an architectural or historical review board, must not need a zoning variance or special/conditional use permit, and must be roof-mounted, compliant with building and related codes, and meet mounting and weight distribution requirements, among others. Along with the application, USP applicants must submit an eligibility checklist, a set of plans that include a site plan, a one- or three-line electrical diagram, specification sheets for manufactured components, and a permit fee. Permit determinations are issued within 14 days of complete application submission. Municipalities that adopt the USP are eligible for grants between $2,500 and $5,000 to implement the new procedures, depending on population, through NYSERDA's Cleaner, Greener

Communities program. The City of White Plains and several other New York municipalities have adopted the USP. For more information about the USP, visit http://ny-sun.ny.gov/-/media/Files/About/Statewide-Initiatives/CGC-Plans/Guidance/NYS-unified-solar-permit.pdf. To view White Plain's USP application, go to http://www.cityofwhiteplains.com/DocumentCenter/View/253.

***Resource: LIPA Fasttrack Permit***

A collaborative effort led by the Long Island Power Authority (LIPA), the Suffolk County Planning Commission, and the Nassau County Planning Commission, the Long Island Unified Solar Permitting Initiative (LIUSPI) developed the model LIPA Fasttrack Permit Application to help Long Island municipalities streamline and standardize the building permit application process for "standard" installations of grid-tied PV or Residential Solar Hot Water (RSHW) systems. Such installations are qualified for the streamlined process if they are roof-mounted to a residential building or legal accessory structure, meet certain mounting height and weight limits, are not subject to architectural or historical board review, are installed by pre-screened contractors, use certified and approved equipment, and are in compliance with current National Electrical Code (NEC) requirements, among others. Applicants must submit an application fee of no more than $50 if not waived, a completed application requirements checklist, an application information sheet, and three sets of plans that include property and contact information, a property survey, and professional configuration diagrams. Permit determinations are provided within 14 days of complete application submittal. The Town of Babylon and several other Long Island municipalities have adopted this model application. For more information about the LIPA Fasttrack Permit Application, go to http://ny-sun.ny.gov/For-Local-Government/Local-Government. To view Babylon's solar energy system fast-track permit process, see Town of Babylon, N.Y., Code Ch. 89, Art. X.

Larger solar energy systems with greater potential land use impacts may require heightened land use review. In these cases, a municipality can subject systems to site plan approval if they exceed certain thresholds for size, total lot coverage, height, energy capacity, or energy usage. For example, many communities require site plan approval for secondary-use solar energy systems installed on nonresidential buildings or lots because the project size is larger and some energy will be used offsite. Major site plan review is required frequently for ground-mounted, principal use systems with large impacts such as land disturbance, increased impervious surface, and aesthetic consequences. Generally, major site plan review involves heightened review with more standards. Minor site plan review has fewer requirements and is appropriate for medium-sized systems with reduced impacts. See Section 4 below for more information about major and minor site plan review. Alternatively, local governments can allow solar energy systems with greater potential land use impacts as special uses. The planning or zoning board must review proposed special uses to determine whether they meet required standards in the special use permit regulations designed to minimize negative impacts.

***Example: Goodhue County, MN***

Goodhue County's solar energy system regulations require all solar energy systems that have greater than a 2 kW capacity to obtain a building permit and a zoning approval

in the form of an administrative review; a zoning permit; or a conditional or interim use permit, depending on the zoning district in which the system is located. The County Board may require an interim use permit in lieu of a conditional use permit for land use activities that the board determines should be permitted for limited duration. Where allowed, utility-scale photovoltaic rooftop and ground-mounted solar energy systems always require a conditional or interim use permit. Commercial-scale rooftop and ground-mounted solar energy systems require a conditional or interim use permit in certain environmentally sensitive zoning districts and a zoning permit in all other districts where allowed. All small-scale residential rooftop and ground-mounted solar energy systems may be approved administratively. Goodhue County, M.N., Zoning Ordinance Art. 19, available at http://www.co.goodhue.mn.us/DocumentCenter/View/2428.

***Example: Town of New Hartford, NY***
New Hartford's solar energy systems regulation permits rooftop- and building-mounted solar systems, as well as solar-thermal systems, as accessory uses in all zoning districts with the issuance of a building permit. The regulation also permits freestanding or ground-mounted solar collectors as accessory uses in all zoning districts with a building permit but subjects systems on lots less than 10,000 square feet to planning board review to ensure appropriate solar access, avoid future solar access conflicts, and minimize aesthetic impacts. Town of New Hartford, N.Y., Code § 118-74.

***Example: Yolo County, CA***
Yolo County's solar energy regulations allow approval of small solar energy systems for onsite uses through the issuance of a building permit and a zoning clearance, provided the application meets setback and other standards set forth in the solar energy regulation. If the County's chief building official believes a small solar energy system could have a specific, adverse impact upon the public health and safety, the official may require the applicant to apply for a use permit. Medium-sized solar energy systems for onsite and/or offsite uses may be approved through site plan approval, provided the application meets specific standards set forth in the solar regulation for medium-sized systems. The site plan review approval is ministerial (not discretionary) and does not require a public hearing. If an application for a medium-sized system fails to meet any of the standards, the zoning administrator must review it as an application for a minor use permit. The board of supervisors approves large and very large utility-scale solar energy systems through the issuance of a major use permit, following the planning commission's recommendation, provided the application is consistent with conditions and standards set forth in the County's solar regulations for large and very large systems. Yolo County, C.A., Code § 8-2.1104, .1105, available at http://www.yolocounty.org/home/showdocument?id=26308.

### *3.3 Reviewing Bulk & Area Requirements*

When adding solar energy systems to zoning districts and choosing a review process for each defined system, municipalities should review the bulk and area charts in those zoning districts to determine whether any requirements will create barriers to these systems. In cases where existing bulk and area requirements would prevent the construction of a solar energy system, the municipality should consider amending

setbacks, yard requirements, height limitations, and lot and impervious coverage requirements to accommodate these systems. Also, local governments can exempt solar energy systems from some or all of these requirements where possible, as in the Town of North Salem, New York (see example below).

***Example: Town of North Salem, NY***
North Salem exempts solar energy systems from the height limitations in its zoning if systems are erected only to the height necessary to accomplish the purposes they are intended to serve. Town of North Salem, N.Y., Code § 250-25(C).

### *3.4 Development Standards for Solar Energy Systems*

Beyond bulk and area requirements or waivers, some municipalities impose specific development standards to mitigate land use impacts associated with solar energy systems, requiring applicants to adhere to these standards prior to granting approvals. As with bulk and area requirements, a municipality should adopt development standards that avoid creating unnecessary burdens for solar energy system development. Such development standards generally vary according to system and approval type, with more stringent requirements associated with greater land use impacts. To minimize the visual impacts of roof-mounted, accessory-use systems, a local government may impose maximum height requirements; solar panel tilt or angle provisions; equipment placement within building envelope; and color or location restrictions that prevent system visibility from a public right of way. Similarly, local zoning may require ground-mounted, accessory-use systems to meet limited setbacks or maximum height requirements; be located within rear or side yards; avoid extending beyond the building façade; blend with surroundings; or employ screening.

Depending on where large-scale, principal-use systems are sited, they can have land use impacts such as increasing impervious coverage, habitat and farmland loss, and aesthetic impacts. As such, large-scale, principal-use systems often must adhere to more rigorous development standards. Such requirements usually address system siting issues; maximum system height; minimum setbacks from adjacent lot lines or structures; screening methods; system operation and maintenance; safety precautions; utility notification; compliance with relevant state and federal requirements; and abandonment, decommissioning, and site restoration, among others.

***Example: Template Ordinance for Solar Energy Development in North Carolina***
The North Carolina Clean Energy Technology Center and the North Carolina Sustainable Energy Association (NCSEA) managed the development of this template ordinance to help municipalities facilitate solar energy system installation. The template ordinance defines three system “levels”. Level 1 systems include most roof-mounted systems, small ground-mounted systems, and building-integrated systems while Level 2 systems encompass medium-sized ground-mounted systems and Level 3 systems comprise all other systems. The template ordinance allows Level 1 systems as permitted uses in all zoning districts provided they meet applicable height, setback, aviation notification, and related district standards. Applicants for Level 2 and 3 systems must submit site plans demonstrating compliance with these same requirements and

must meet visibility and decommissioning requirements. The template ordinance's parcel line setbacks require Level 1 and 2 systems to adhere to setbacks in underlying zoning, while requiring 30-foot front, 15-foot side, and 25-foot rear setbacks for Level 3 systems in all but low density residential districts. Visibility requirements for Level 2 and 3 systems mandate visual buffering, allow public signage, and require measures to minimize light pollution at night. To view the entire template ordinance, visit https://nccleantech.ncsu.edu/wp-content/uploads/NC-Template-Solar-Ordinance.pdf.

***Example: DVRPC Renewable Energy Ordinance Frameworks***
The Delaware Valley Regional Planning Commission's Alternative Energy Ordinance Working Group developed the DVRPC Renewable Energy Ordinance Frameworks to help municipalities adopt regulations for small-scale renewable energy systems. The ordinance frameworks "provide a menu of sample ordinance language options, both permissive and restrictive, to allow municipalities to build a customized ordinance that addresses their local issues." The frameworks offer a range of development standards for municipalities to choose from, including requirements for height limits, setbacks, aesthetics and screening, decommissioning and abandonment, glare reduction, and relative production/generation. To access the ordinance frameworks, go to http://www.dvrpc.org/EnergyClimate/ModelOrdinance/Solar/pdf/2012-11-30_AEOWGSolarFrameworkFINAL.pdf.

***Example: Model As-of-Right Zoning Bylaw: Allowing Use of Large-Scale Ground-Mounted Solar PV Installations***
The Massachusetts Executive Office of Environmental Affairs' Department of Energy Resources developed this model zoning bylaw to promote development of new large-scale, ground-mounted solar PV installations using reasonable standards. The model bylaw requires building permits for all large-scale ground-mounted solar PV installations and site plan review for those installations with 250 kW or larger rated nameplate capacity. In addition to other requirements, applicants for these installations must submit documentation of site control; provide an operation and maintenance plan; notify the local utility of installation; abide by dimension requirements; adhere to design standards for lighting, signage, and underground utility connections; cooperate with emergency services; limit vegetation clearing; and observe maintenance, abandonment, and decommissioning standards. Except for lots that abut conservation-recreation and residential districts, dimension requirements call for 10-foot front yard setbacks, 15-foot side yard setbacks, and 25-foot back yard setbacks. Additionally, appurtenant structures must be shaded from view by vegetation and/or joined or clustered to avoid adverse visual impacts. For more information about the model bylaw, visit http://www.mass.gov/eea/docs/doer/green-communities/grant-program/solar-model-bylaw.pdf.

## 4. Amending Site Plan Requirements

If a municipality wants to require site plan review for large solar energy systems, the site plan regulations must be amended where they were created to consider the particular circumstances of solar energy systems. Local site plan regulations can apply to solar

energy systems added to an existing building or developed lot, as well as to new developments that include these systems. Site plan regulations require applicants to submit a drawing or site plan prepared according to required specifications showing the arrangement, layout, and design of the proposed land use for review and approval by a local board. Typically, the site plan must show certain elements, such as access, parking, landscaping and buffering, drainage, utilities, roads, curbs, lighting, and the location and dimensions of the principal and accessory buildings and any other intended improvements. Some communities require site plans, particularly those of larger projects, to show adjacent land uses and to provide a narrative statement of how the site's development will avoid or mitigate adverse impacts on them.

Depending on the type, location, and size of impacts associated with a solar energy system, a municipality may amend its regulations to require major or minor site plan review and approval or to exempt the system from site plan review. Generally, major site plan review is reserved for larger projects and requires site plan applications to include more information, while minor site plan review is required for smaller projects and entails a simpler application process.

### *4.1 Major Site Plan Review*

Because they involve larger projects with bigger impacts, major site plan applicants must submit additional information with the site plan, such as a transportation or stormwater management plan. Additionally, major site plan regulations typically require two review phases, preliminary and final, and involve required public notice and hearings on site plan applications prior to taking final action.

### *4.2 Minor Site Plan Review*

In contrast to major site plans, some municipalities adopt minor site plan requirements to streamline the permitting process for smaller projects by requiring less information and providing faster review. Generally with minor site plan review, the legislative board can waive certain requirements for approval, no public hearing is required, and, in some cases, administrative staff can complete the review in lieu of planning board review.

***Example: Township of Bethlehem, NJ***

Bethlehem's solar energy facilities regulation requires minor site plan approval for ground-mounted solar energy facilities between 2,000 square feet and 10 acres in size, while requiring preliminary and final site plan approval for systems greater than 10 acres in size. The planning board or an appointed site plan subcommittee may waive the minor site plan approval requirement if the proposed facility is reasonable and adheres to the solar regulation's general purpose and intent. In addition to Bethlehem's standard site plan requirements, site plans for solar energy facilities must include (1) the location of proposed and existing overhead and underground utility and transmission lines, (2) the location of any proposed or existing substation, inverter, transformer or equipment enclosures, (3) a description of any necessary upgrades or modifications to existing substations or the necessity for a new substation, (4) a description of how the facility's generated energy will connect to the electrical distribution or transmission system or the

intended user's electrical system, (5) for solar energy facilities over two MW, the location and elevations of all transmission lines, support structures, and attachments to the substation(s), (6) the location of existing hedgerows and vegetated windbreaks; a landscape maintenance plan that demonstrates how the ground cover and screening plantings will be maintained, (7) a decommissioning plan documenting how the property will be restored once the solar energy facility has been removed and an estimate of the cost of decommissioning, and (8) an interconnection agreement with the regional electricity transmission organization PJM for projects over two MW. Major site plan applicants also must include an acoustical analysis and, if the facility is over two MW, documentation detailing the available capacity of the region's existing electric infrastructure and the effect the proposed facility will have on this infrastructure. Township of Bethlehem, N.J., Code §§ 102-37.3(C)(9), -(22).

## 5. Navigating SEQRA

Under New York's State Environmental Quality Review Act (SEQRA), local land use boards are sometimes responsible for conducting an environmental analysis before they approve projects, including solar energy systems. This includes but is not limited to the land use boards described above that review applications for variances, special use permits, site plans, and other submissions. SEQRA review also applies to a governing board while amending zoning. To assist with this review, applicants must attach to their applications a short or long Environmental Assessment Form (EAF), depending on the type of action their application involves. The local board then must make a determination of significance, declaring whether the project is likely to have a significant adverse environmental impact. If that declaration is negative, no further environmental review is required. Where that declaration is positive, a full Environmental Impact Statement (EIS) must be prepared. The time and expense involved with a full EIS are significant.

Under state SEQRA regulations, actions are grouped as Type I, Type II, or Unlisted Actions. Type II Actions are exempt from review and include actions such as construction, expansion, or placement of minor accessory structures. For example, small-scale solar installations are generally considered to be Type II actions,[1] meaning that they have been pre-determined as having no significant adverse impact on the environment and require no review under SEQRA. Local governments may create their own Type II lists and specifically include building-integrated solar components and small-scale, roof- or ground-mounted systems on their list, exempting them from all SEQRA requirements, including the submission of an EAF. See details below.

Type I Actions are those that meet thresholds contained in the SEQRA regulations; they are considered more likely than others to have a significant adverse environmental impact. Applicants must submit a long Environmental Assessment Form with their applications, which contains more detail about potential environmental impacts that the short form. Large-scale solar PV projects generally fall within the parameters of a Type

[1] SEQR Type II Action: §617.5(c)(7) & (10)

I[2] or unlisted SEQRA classification. When reviewing Type I Actions, however, a complete Environmental Impact Statement (EIS) is not required if the project is unlikely to have a significant adverse environmental impact. Unlisted Actions are neither exempt nor Type I Actions. The local board can avoid requiring an EIS for an Unlisted Action by issuing a conditioned negative declaration where a few conditions can be imposed that eliminate any significant adverse environmental impact.

To appropriately limit the SEQRA review process for solar energy projects, local governments can take several steps:

1. Because Type II actions are exempt from SEQRA, a community should consider adding small-scale solar energy systems to its local Type II list to ensure systems with negligible impacts do not trigger SEQRA review. State SEQR regulations present a list of Type II actions that includes the "construction, expansion or placement of minor accessory/appurtenant residential structures, including garages, carports, patios, decks, swimming pools, tennis courts, satellite dishes, fences, barns, storage sheds or other buildings not changing land use or density." 6 NYCRR § 617.5(c)(10). It also includes "construction or expansion of a primary or accessory/appurtenant, non-residential structure or facility involving less than 4,000 square feet of gross floor area and not involving a change in zoning or a use variance and consistent with local land use controls, but not radio communication or microwave transmission facilities." 6 NYCRR §617.5(c)(7). These regulations do not specifically mention accessory solar energy systems but can be so interpreted, since these systems' impacts are similar to those of the items listed. To be certain that small-scale solar systems are exempt from SEQRA review, a community may add them specifically to the local Type II list.

2. Where a solar energy system does not meet the regulatory thresholds for a Type I Action and is not on the Type II list, making it an Unlisted Action, an EIS can be avoided where the local board finds there is no significant adverse environmental impact or where such impacts can be mitigated through the use of a conditioned negative declaration.

3. Municipal staff should negotiate with developers in a pre-application meeting to remove from their plan any problems that will lead to a positive declaration that the project may involve one or more significant environmental impacts, thus requiring the completion of an EIS. In *Merson v. McNally*, 90 N.Y2d 742 (1997), the New York Court of Appeals sanctioned informal multi-party negotiations during the local environmental review process. The court found that a proposed project involving several potentially large environmental impacts can be mitigated through project changes negotiated early in the SEQRA review process to which involved stakeholders agreed, including the proposing party.

Municipalities also should ensure that their application forms clarify the level of review required for each type of action. For example, the application contain specific information that demonstrates that it is a Type II action and that no environmental

[2] SEQR §617.4(b)

review is required. Further, local governments should consider providing unsophisticated applicants with technical assistance for difficult EAF provisions. Municipalities can maintain maps and databases that help applicants answer questions about connections to public water, sewer, or transit and proximity to environmental justice communities of concern, all information required in the short EAF.

## 6. Review by Additional Local Boards

In addition to building permits, land use approvals, and SEQRA review, solar energy projects may require review by other local boards in some localities. These include the zoning board of appeals, design or architectural review boards, and historic preservation commissions.

### *Zoning Board of Appeals*

If zoning is updated as described above, the need for variances is eliminated; however, if a developer applies to the local building department for permission to build a solar energy system and the application does not comply with the use, setback, height, or area requirements of the zoning ordinance, the proposal must be denied. The applicant then may apply to the zoning board of appeals for a use or area variance, prolonging the approval process. Local governments can eliminate this extra step in the process by amending appropriate use, bulk and area requirements to accommodate allowed solar energy systems or including setback or height exemptions for solar energy systems in zoning. See Section 3 above for more information.

### *Design or Architectural Review Board*

Design review laws authorize a design or architectural review board (ARB) to advise on or review and approve proposed new construction and building improvements in zoning districts or areas of special scenic, architectural, or aesthetic importance, as defined by the law. During its review, the ARB verifies that a proposed project's exterior design and treatment conforms to the regulation's design review standards. Often, design review laws require the board to determine whether proposed construction is "excessively dissimilar" to an established design pattern, authorize the board to eliminate "visual offensiveness," and/or empower the board to conform design in discrete areas to the character of specific landmarks or architecture of distinction. Under these standards, an ARB may determine that solar energy systems do not conform to required design review standards. Additionally, the design review process can add weeks to the approval process for solar energy systems. Local governments can prevent this conflict and streamline the process by amending design review laws to exempt or accommodate solar energy systems. Regulations can eliminate design review for systems with negligible impacts, like building-integrated systems and small-scale roof-mounted panels, and include requirements to minimize the visual impact of larger systems.

***Example: White Plains, NY***

White Plains exempts solar energy systems from review by the City's design review board when they: (1) are installed on one- or two-family structures that do not require a variance; (2) have a rated capacity of 12 kW or less; and (3) are mounted parallel to the roof surface or tilted with no more than an 18-inch gap between the module frame and roof surface. City of White Plains, N.Y., Zoning Ordinance § 4.4.21.2.

***Example: Village of Mastic Beach, NY***

The Village's solar energy systems regulation exempts systems from architectural review board approval if they meet standards set forth in the regulation. For example, roof-mounted solar systems may not extend beyond the exterior perimeter of the building on which the system is mounted or built, and ground-mounted solar energy systems may not extend into the required rear yard accessory setback when oriented at minimum design tilt. Additionally, system design must make best efforts to blend into the architecture of the building or be screened from routine view from public rights-of-way, and the system's color must be consistent with roofing materials. Mastic Beach's solar regulation also allows building-integrated photovoltaic solar systems regardless of visibility, provided that the building component in which the system is integrated meets all required setback and regulations for the district in which the building is located. Village of Mastic Beach, N.Y., Code Ch. 415.

***Historic Preservation Commission***

A local historic preservation commission (HPC) is authorized to review and approve any demolition, relocation, new construction, or exterior alteration affecting designated historic properties within its jurisdiction. Solar installations on or adjacent to designated historic properties require HPC approval, usually in the form of a certificate of appropriateness. HPC review lengthens the approval process for a solar energy system considerably and may result in its disapproval. Generally, an HPC meets monthly, often creating a weeks long waiting period for applicants. Also, historic district and landmark preservation regulations and guidelines may conflict with local solar energy initiatives because solar panels and related equipment frequently clash with historic building aesthetics and architecture. To avoid conflicts and process delays, a local government can amend these regulations and guidelines to make them compatible with local solar energy laws or include exemptions for solar energy systems. Amended regulations can allow solar energy systems on historic properties if their design and location do not impair the historic district's character and appearance. Historic district regulation is a complex area of law, so municipalities authorized by the State to control development in designated historic districts may need state agency permission to streamline approvals.

***Example: Milton, WI***

Milton's regulation for historic preservation districts includes solar apparatus criteria for the HPC's review of alterations in historic districts. The review criteria allow passive and active solar apparatus that do not detract from a building's architectural integrity and that are as unobtrusive as possible. Solar devices may not hide significant architectural features from street view, result in the loss of these features, or become a major feature of the design because they are large in scale. City of Milton, W.I., Code § 34-162.3.

***Example: Farmington, CT***
Farmington's historic district regulation states that its historic district and properties commission will not deny a certificate of appropriateness for an exterior architectural feature, such as a solar energy system, unless the commission finds that the feature cannot be installed without substantially impairing the historic character and appearance of the district. The certificate of appropriateness for a solar energy system may require design modifications and location limitations that do not significantly impair the system's effectiveness. City of Farmington, C.T., Code § 111-26.

## 7. Requiring and Incentivizing Solar Energy Systems

In addition to allowing solar energy systems in zoning, municipalities can amend other land use regulations to require or incentivize solar energy systems in certain development projects. These include building orientation and design requirements, building ready standards in building and related codes, solar mandates, solar access protections, and zoning incentives in certain districts. To further encourage solar energy systems, local governments can implement other incentives, such as approval process streamlining and fee reductions.

### *Building Orientation & Design Requirements*

Site plan and subdivision regulations can require solar-ready lot and building orientation. Building orientation affects a building's ability to utilize solar energy systems, as well as natural lighting and passive heating. Site plan and subdivision regulations can require developers to orient buildings and streets so that the buildings' longer dimensions are south facing, ensuring maximum solar access.

***Example: Town of Big Flats, NY***
Big Flats adopted a solar access regulation that requires applicants for new residential development including either ten or more acres of site development area and/or more than 50 dwelling units to submit a solar access plan with the site plan. The solar access plan must:

- Protect solar access between the solar azimuths of -45 degrees east of due south and +45 degrees west of due south.
- For solar access roads, design lots and building setbacks so that buildings are oriented with their long axes running from east to west for one-unit development and north to south for multi-unit development.
- In order to maximize solar access, place higher density development units on a south-facing slope and lower density dwelling units on a north-facing slope.
- Site structures as close to the north lot line as possible to increase yard space to the south for reduced shading of the south face of a structure.
- Site tall structures north of short structures
- Include a description of any legal mechanisms, such as deed restrictions, covenants, etc., that protect or provide for solar access.

Town of Big Flats, N.Y., Code of Ordinances § 17.36.140.

### *Building Ready Standards in Codes*

Where authorized, municipalities can require solar-ready construction standards in local building and related codes. These standards may include electrical and plumbing accommodations for future solar energy systems.

***Example: Chula Vista, CA***

Chula Vista's electrical code includes photovoltaic (PV) pre-wiring requirements that mandate all new residential units to include an electrical conduit specifically designed to allow the later installation of a PV system that utilizes solar energy as a means to provide electricity. Similarly, Chula Vista's plumbing code requires all new residential units to include plumbing specifically designed to allow the later installation of a solar water heater that utilizes solar energy as the primary means of heating domestic potable water. To obtain a building permit, the applicant's building plans must include both PV pre-wiring and solar water heater pre-plumbing. The building official may modify or waive these provisions if the applicant demonstrates that the requirements are impractical due to shading, building orientation, construction constraints, or parcel configuration. City of Chula Vista, C.A., Municipal Code §§ 15.24.065; 15.28.015.

### *Solar Mandates*

Where authorized, local governments may require certain new developments to include solar energy systems or contribute to another solar energy project elsewhere in the community.

***Example: Lancaster, CA***

Lancaster's solar energy system implementation regulation requires all new single-family homes to have a solar energy system to receive a building permit. The mandate includes subdivisions, requiring the subdivider to meet the aggregate energy generation requirement within the subdivision (as calculated by the per-unit energy generation requirement multiplied by the number of homes in the subdivision). Alternatively, a homebuilder may choose to meet the solar energy generation requirement by purchasing solar energy credits from another solar-generating development located within Lancaster. City of Lancaster, C.A., Code § 17.08.305.

### *Solar Access Protections*

Municipalities can protect access to sunlight for solar energy systems in several ways, but must be careful that it is not violating neighbors' property rights under the Fifth Amendment. First, in limited circumstances local governments can sanction or require solar easements for solar energy systems. A solar easement is a legal agreement between adjacent property owners to protect solar access for a solar energy system on one of the properties. Typically, these regulations require written and recorded solar easements that define easement dimensions, how the easement will terminate, and compensation for easement maintenance or interference, among other provisions. Additionally, local governments can grant solar access permits for solar energy

systems. After submitting evidence showing system installation, the applicant receives a solar access permit that protects the system from future shading by construction or vegetation on adjacent properties, effectively creating a solar easement. Some localities adopt regulations that require construction on a neighbor's property to not interrupt solar access during critical times of the day. Finally, local governments may amend tree preservation laws or landscaping requirements to consider and accommodate their impacts on nearby solar energy systems.

***Example: City of Tonawanda, NY***

Tonawanda authorizes applicants for large-scale or utility-scale solar energy systems to negotiate with adjacent property owners for any necessary solar skyspace easements and requires the applicant to include documentation of any solar skyspace easement that is properly recorded. At a minimum, such easement must include:

- Restrictions placed upon buildings, structures, vegetation, etc. that would potentially obstruct solar skyspace;
- Easement dimensions expressed in measurable terms;
- Any permissible obstruction of the solar skyspace expressed in measurable terms;
- Provisions for trimming vegetation;
- Provisions for compensation in the event of a violation of the easement;
- Terms or conditions, if any, under which the easement may be revised or terminated.

City of Tonawanda, N.Y., Code § 215-180(C)(9).

### *Zoning Incentives*

Sometimes the economics of a project will not sustain a solar energy system installation. By allowing developers to build beyond maximum development densities in local zoning, they can earn additional profits and use these to install solar energy systems. New York municipalities are authorized to adopt incentive zoning systems and may amend zoning to include bonus zoning or density incentives that allow developers to build at greater densities than otherwise permitted or to adjust certain bulk requirements like height or required parking spaces in exchange for installing a solar energy system. When creating a zoning incentive, municipalities must research local market conditions and engineer the incentive to provide an appropriate bonus in exchange for the amenity.

***Example: Town of Gorham, ME***

Gorham's density bonus provisions provide a maximum density bonus of 25 percent over the allowable base density for residential and nonresidential uses in planned unit developments (PUD) in exchange for public amenities, including solar access and energy efficient design, layout, and construction. To qualify for a bonus of 5 percent above the allowable base density, a PUD may provide solar access to 40 percent of the dwelling units and ensure through appropriate deed restrictions that dwelling units will utilize solar energy systems for water and space heating purposes. Town of Gorham, M.E., Land Use and Development Code, Ch. IA, Section IV, available at http://www.gorham-me.org/public_documents/gorhamme_codes/land_ord/landuse.

***Other Incentives***

In addition to zoning incentives, local governments can provide other incentives to encourage solar energy system installation. Possible financial incentives include property tax abatements, reduced or discounted application fees, or fee waivers associated with solar energy systems. A municipality can create an educational incentive for these systems by establishing an information clearinghouse that directs residents to resources providing technical assistance and financial assistance for solar energy system installations. Additionally, local governments can seek funding from federal and state agencies and leverage state and federal grants and incentives to assist residents with system installations. For example, NYSERDA's Cleaner Greener Communities Program and the NY-Sun Initiative's Community Solar NY provide grant opportunities for municipal solar PV projects and programs. Moreover, municipalities and their residents can take advantage of state solar PV incentives through the NY-Sun Incentive Program. Finally, a municipality can streamline the project review and approval process for solar energy systems to reduce process duration and increase certainty.

***Example: Town of Chicago, IL***

The "Chicago Solar Express" is a streamlined permit approval system for solar installations on residential and commercial properties. Part of the City's Easy Permit Process, the solar permit approval process for small installations (with an energy capacity of less than 13.44 kW) reduced the process time from 30 days to one day and decreased the fee schedule by $100, from $375 to $275. The streamlined process applies to existing structures, not new developments or major building remodeling or new additions. For more information about the Chicago Solar Express, visit http://www.cityofchicago.org/city/en/progs/env/solar_in_chicago.html.

## 8. Helpful Resources

The following resources provide helpful recommendations for local governments embarking on an initiative to plan and regulate for solar energy systems.

***Resource: NY-Sun PV Trainers Network***

Together with Meister Consultants Group, Sustainable CUNY, Entech Engineering and other partners, the New York State Energy Research and Development Authority (NYSERDA) launched the three-year NY-Sun PV Trainers Network in August 2014 to help local officials streamline solar PV permitting, installation, inspection and approvals. Training workshops are available for free or minimal cost to local policy makers, code enforcement officials, inspectors, engineers, architects, and first responders. Offered training workshops include an introduction to solar policy, developing a solar strategy, solar PV permitting and inspection methods, and solar PV safety and fire considerations. Additionally, the Network offers in-depth technical training assistance for incorporating solar energy goals into comprehensive plans, drafting solar energy regulations, streamlining the solar permitting and inspection processes, identifying local

solar financing options, and procuring solar for municipal facilities. For more information about the Network visit https://training.ny-sun.ny.gov.

### *Resource: Planning for Solar Energy*

With support from DOE's SunShot Initiative, the American Planning Association's Planning for Solar Energy provides communities with a basic rationale for planning for solar energy use, summarizes fundamental characteristics of the U.S. solar market related to local solar energy use, and explains how communities can promote solar energy use through public engagement, planning and regulatory best practices, development services and public-private partnerships, public solar installations, and economic and educational programs. To access this resource, visit the Resources page at www.planning.org/resources/.

### *Resource: APA's Solar Planning & Zoning Data Search*

The American Planning Association hosts an online Solar Planning & Zoning Data Search database. From this portal, users can search hundreds of examples of solar-supportive plans, development regulations, and other planning-related implementation tools by place type, population range and density, tool type, and solar practice. The database includes example policies, plans, and regulations from communities across the nation. To access the portal, go to https://www.planning.org/solar/data/.