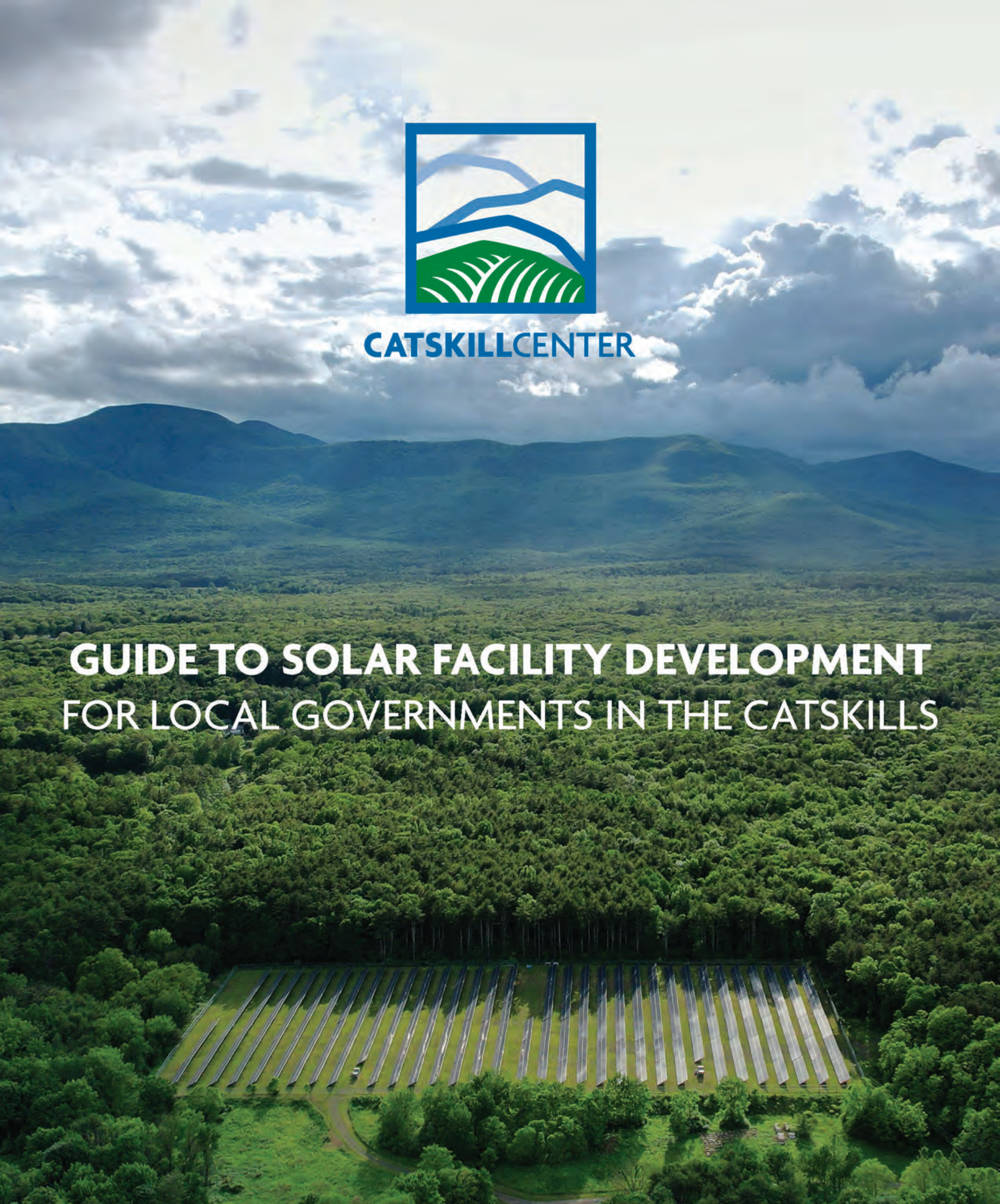


CATSKILLCENTER

GUIDE TO SOLAR FACILITY DEVELOPMENT
FOR LOCAL GOVERNMENTS IN THE CATSKILLS

PREPARED BY THE **CATSKILL CENTER FOR CONSERVATION AND DEVELOPMENT**

Contents

Executive Summary

Prepared by the Catskill Center for Conservation and Development, this guide is designed to aid local governments within the Catskills Region in navigating the complex landscape of solar facility development. Recognizing the dual imperative of advancing renewable energy goals while preserving the unique environmental, cultural, and economic assets of the Catskills, the guide offers comprehensive information, strategies, and best practices.

Purpose and Vision of this Guide

The guide aims to equip local governments with the knowledge and tools necessary to respond to the growing interest in large-scale solar development thoughtfully and effectively, balancing renewable energy initiatives with community values and environmental stewardship. Planning for both small-scale and large-scale solar facilities are included in this Guide, with an emphasis on the steps and best management tools suggested for large-scale facilities.

Key Components of this Guide

- **Current Solar Development Landscape:** An overview of the solar energy sector's current state, driven by New York State's clean energy goals and the Catskills' potential for solar energy generation.
- **Benefits and Challenges:** An examination of solar development's economic and environmental benefits versus its potential challenges, including land use, habitat disruption, and community concerns.
- **Regulatory Framework and Planning:** Guidance on navigating solar energy regulations, zoning considerations, and the role of local governments in facilitating responsible solar development.
- **Best Management Practices:** Practical recommendations for both small-scale and large-scale solar projects, focusing on sustainable siting, environmental protection, and community engagement.
- **Community Engagement and Land Use Planning:** Strategies for involving communities in solar planning processes, ensuring transparency,

and aligning projects with local values and conservation goals.

- **Special Considerations:** Insights into farmland protection, natural resource inventories, and the integration of solar with agricultural and ecological priorities.

Actionable Steps for Implementation

The Guide provides local governments with actionable steps to:

- Conduct comprehensive solar capacity assessments.
- Engage communities in the planning process.
- Develop or refine zoning laws and permitting processes tailored to solar development.
- Implement best management practices to mitigate potential adverse environmental impacts.
- Leverage state initiatives and resources to support solar energy adoption.

Conclusion

The "Guide to Solar Facility Development for Local Governments in the Catskills Region" is intended as a resource for municipalities aiming to proactively manage solar energy development. By embracing the Guide's principles and strategies, local governments can help ensure that solar energy projects contribute positively to the region's sustainable future, balancing progress with preservation.

Overview

Purpose

Consistent with its mission to protect and foster the environmental, cultural and economic well-being of the Catskills Region, the Catskill Center has prepared this Guide to assist communities in the Catskills Region respond to the challenge of siting new solar facilities in their areas of responsibility. It is a land use that presents constantly changing issues due to new technologies, sponsors, laws, and development priorities. Many local communities often do not have plans, policies or regulations in place to address these projects and large-scale solar development projects can be particularly controversial.

We also recognize that solar is an important renewable source of energy to fight climate change, can enhance energy independence, and can improve resiliency in the face of climate change. At the Catskill Center, use of solar energy is consistent with our commitment to encourage sustainability and resiliency in the Catskills Region while respecting community character that is so central to the quality of life in the region.

This Guide has been developed because the Catskill Center believes that decarbonizing our energy use is key to limiting climate change and protecting the Catskills Region. The Guide recognizes both the benefits of solar as an important source of renewable energy to address electricity and climate adaptation and the needs of Catskills Region municipalities to respond to the concerns of its citizens.

About this Guide

This document provides guidance, information, and best practices for local governments to effectively plan for and regulate the siting of solar energy projects within their jurisdictions. Although this Guide addresses both small scale and large-scale solar facilities, it concentrates on large-scale projects because those are more complex due to scale and siting.

This Guide to Solar Facility Development for Local Governments in the Catskills Region includes information to help communities that choose to incorporate planning for large-scale solar learn more about common concerns, planning tools, and best management practices. With that knowledge, they can establish policy, plans and, if desired, regulations, which promote the best siting and management of these facilities to limit adverse impacts.

Elements of this Guide

Solar Energy and Terms: Provides an overview of solar energy, its significance in renewable energy transition, and commonly used solar terms.

Regulatory Framework and Siting Considerations: Discusses regulations governing solar energy development and guidance on selecting suitable sites for solar projects. This includes considerations for land use compatibility, environmental impact, and community concerns.

Community Engagement and Land Use Planning: Strategies for engaging with communities and integrating solar projects into the landscape are discussed. This includes aesthetic design guidelines and environmental impact evaluations.

Zoning and Permitting Process: Best management practices in zoning regulations and the permitting process for solar projects is provided including information on addressing potential aesthetics and environmental impact of solar facilities.

Special Considerations for Farmland and Natural Resources: The Guide highlights the importance of farmland protection plans and natural resource inventories in planning for solar development to ensure compatibility with agricultural preservation goals and protection of sensitive habitats and biodiversity.

Clean Energy Community and Climate Smart Communities: The Guide describes New York State initiatives like the Clean Energy Community and Climate Smart Community Programs, which support local governments in promoting and incentivizing clean energy and sustainability.

Solar Analysis and Planning: This section emphasizes the need for comprehensive solar planning in municipalities, including solar capacity assessments in the planning process. This section also outlines steps for planning solar development, including conducting solar capacity assessments, engaging the community, understanding natural resources, and developing local regulations.

Battery Storage Facilities: The benefits and concerns related to battery storage systems are discussed, including fire and chemical hazards, overcharging, disposal issues, and visual impacts. It suggests implementing safety protocols and consulting emergency providers for proposed battery storage facilities.

Model Laws and Resources: This section references tools a municipality can utilize to develop a local solar law and offers information on different approaches to local regulations through examples in New York. It also suggests resources for further information on solar siting and renewable energy.

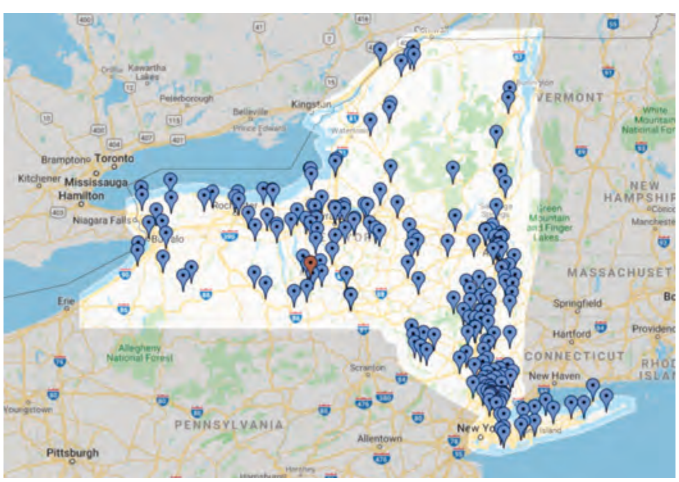
Mapping Resources: Various mapping resources that are available in New York State for solar planning are identified.

Glossary: Common terms related to solar development are defined to enhance clarity and understanding.

Current State of Large-scale Solar Development in the Catskills Region

Solar development in New York State is driven by the State's Climate Leadership and Community Protection Act (CLCPA, or Climate Act), which was signed into law in July 2019. The Climate Act is comprehensive and aimed at addressing and mitigating the impacts of climate change in New York State. The key goals of the Act include reducing greenhouse gas emissions, promoting renewable energy and energy efficiency, providing for a fair and equitable transition to a low-carbon economy, and promoting climate adaptation and resilience.

The Climate Act established aggressive goals to be met including meeting 70% of New York's electricity needs with renewable energy sources by 2030 and a 40% reduction in greenhouse gas emissions by 2030. The Act was further amended to establish a target of 85% reduction in greenhouse gasses from 1990 levels by 2050. Other Climate Act targets include 100% zero emissions by 2040; net zero emissions statewide by 2050; 6,000 megawatts of distributed energy from solar by 2025, and 3,000 megawatts of energy storage to be installed by 2030. New targets have been set to deploy 10,000 megawatts of distributed solar and 6,000 megawatts of energy storage by 2030. Thus, large amounts of renewable energy must be procured to reach the Climate Act's requirements, and this is driving solar development in the State.



According to data from NYSERDA (New York State Energy Research and Development Agency) and from the New York Office of Information Technology Services as of January 2024, New York currently has a 5,103 megawatt capacity statewide generated from 213,567 small and large solar projects. For example, in Greene County, there are 1,053 projects generating 60 megawatts. In Ulster County, there are 5,210 projects generating 129 megawatts. Delaware has 236 projects that generate 13.5 megawatts and Sullivan has 931 projects generating 54.8 megawatts.

Many of these projects received state funding through NYSERDA. For example, in Greene County, 936 (of the 1053) have received NYSERDA funding and there are 38 projects in the pipeline. Most are residential projects (890), but there are 36 small commercial solar projects, and 10 commercial/industrial projects[1]. There are three commercial/industrial projects in the pipeline. In Ulster County, 4596 out of 4840 NYSERDA funded projects are residential scale, with 220 small commercial (18 in the pipeline), and 24 commercial/industrial scale facilities (8 in the pipeline).

These numbers will change as solar development continues but are offered to help in understanding current conditions related to solar development in the Catskills Region.

Local Benefits and Challenges

Benefits

Solar development in New York State can offer various benefits and can have positive environmental and economic roles. Some key benefits include:

[1] Commercial/Industrial projects would be considered 'large-scale' solar facilities.

- Environmental and Sustainability Benefits
  1. Renewable Energy Generation: Solar power provides a renewable energy source, reducing dependence on fossil fuels, lowering carbon emissions, and contributing to cleaner air. It aligns with goals to diversify the energy mix and supports state and global initiatives to combat climate change. By utilizing solar power, communities can significantly reduce their carbon footprint and mitigate the adverse impacts of climate change.
  2. Alignment with Clean Energy Goals: By investing in solar energy, states like New York can move towards their clean energy and carbon reduction targets, facilitating a transition to a more environmentally friendly and sustainable energy system.
  3. Agriculture Co-location Opportunities: Solar installations can coexist with agricultural activities, offering a dual-use scenario that maximizes land use efficiency and supports local agriculture. Dual-use can, in some cases, help ameliorate the effects of greater heat on plants.
  4. Educational and Social Benefits: Promoting solar energy fosters a sense of environmental responsibility and empowers individuals and communities to take action against climate change.
  5. Long-term Sustainability: By investing in solar energy infrastructure, communities can contribute to a more sustainable future for generations to come.
- Economic Growth and Job Creation
  1. Job Opportunities: The construction, operation, and maintenance of solar facilities generate significant employment opportunities across various skill levels related to manufacturing, installation, maintenance, and other related sectors.
  2. Investment and Economic Stimulus: The solar industry attracts investments, driving economic growth both locally and at the state level. The development of solar infrastructure can lead to a virtuous cycle of investment and development in the clean energy sector.

> A host community benefit agreement is a legally binding agreement between the developer and the community designed to ensure that local communities benefit from the development and operation of the project.

  3. Financial Incentives and Cost Reductions: Solar installations offer economic benefits such as tax incentives, potential reductions in electric bills for residents, supplemental income for landowners leasing land to solar projects, and Host Community Benefit Agreements ensuring local communities gain directly from projects.
- Grid Resilience and Energy Independence
  1. Enhanced Grid Resilience: Distributed solar installations contribute to the resilience of the electric grid by generating energy closer to where it is consumed. This reduces transmission losses and increases the grid's ability to withstand disruptions. Solar energy can also help alleviate strain on the grid during peak demand periods.
  2. Energy Independence: By reducing reliance on imported fossil fuels and enabling local energy generation, solar installations contribute to greater energy independence. This decentralization of power production can lead to a more secure and reliable energy supply.

Challenges

While large-scale solar development in New York State offers numerous benefits, potential adverse impacts need to be considered as well to ensure sustainable and responsible implementation. Some of the challenges and concerns often associated with large-scale solar development include:

- Environmental and Land Use Impact
  1. Habitat Disruption and Biodiversity: Solar farms require extensive land, which can lead to the clearing of forests and natural habitats, disrupting local ecosystems and fragmenting wildlife habitats. This impacts biodiversity and can lead to the loss of species.
  2. Agricultural Land Use: There's competition between solar installations and agricultural uses of land. While solar projects can contribute to renewable energy goals, they can also reduce available farmland and prime farmland soils, impacting food security and rural economies.
  3. Soil Health and Water Quality: Construction and land clearing for solar projects can cause soil erosion and disturbance, altering hydrological patterns and potentially affecting local water quality through increased runoff.
  4. Climate Impact: Although solar energy reduces reliance on fossil fuels, the manufacturing, transportation, and installation processes of solar panels have a carbon footprint. Additionally, clearing land for solar panels can reduce the area's carbon sequestration capabilities.
- Social and Community Impact
  1. Visual Impact: Large arrays of solar panels can alter the visual landscape, especially in rural or scenic areas, leading to resistance from local communities who value their traditional vistas. Some communities are concerned about large solar facility impacts on tourism when local economies are based on scenic beauty.
  2. Community Concerns: Beyond aesthetics, communities may worry about construction noise, increased traffic, potential damage to roads, and the impact on local wildlife. There are also concerns about how solar installations might affect property values and the overall character of the area.
  3. Quality of Life: During the construction phase, the increase in noise and traffic can temporarily disturb the quality of life for nearby residents. Long-term, the presence of a solar farm can alter the rural character of an area, affecting how residents feel about their community.

- Waste and Infrastructure Management
  1. Waste Generation: The lifecycle of solar panels leads to the generation of waste, including hazardous materials used in their production and the challenge of recycling or disposing of panels at the end of their useful life.
  2. **Decommissioning Considerations:** The decommissioning and disposal of solar panels at the end of their life cycle require management to avoid environmental harm.
  3. Infrastructure Strain: The construction and deconstruction of solar farms can place a significant temporary burden on local infrastructure, including roads and utilities. Planning and coordination with local communities are essential to mitigate these impacts.

> Balancing the benefits of large-scale solar development with these potential adverse impacts involves careful planning, community engagement, and the implementation of sustainable practices. Proper regulation, environmental assessments, and ongoing monitoring can help address and mitigate these concerns.

Highlight of Best Management Practices

This Guide offers details on a variety of planning tools to plan for solar development. In summary, this section and its planning "checklist" highlights the tasks and methods the community could use if it decides to develop solar plans, policies or regulations.

Recommended Planning Efforts to Address Solar Development (Pages 13 to 20)

- **Public Engagement.** Involvement of community members, local businesses, government agencies, and other stakeholders in the planning process is important. Gather input, address concerns, and identify solar initiatives that would be acceptable through community meetings, workshops, and outreach programs.
- **Comprehensive Planning.** Update or develop a comprehensive plan or other relevant strategic plans to establish Town policies related to solar development. The plan should include vision, goals, and strategies to establish policy and outline specific actions the Town or Village should take to address solar development in the community. As part of this process, consider conducting a solar capacity analysis. Evaluate the solar potential of the community that involves mapping and understanding topography and slope/aspect (sunlight data), shading, and location of electrical wires and substations. Identify potential sites for large-scale solar installations, considering factors such as available land, land use regulations, environmental impact, and proximity to existing electrical grid infrastructure. This step may be helpful if a Solar Overlay District is a useful land use regulatory tool is useful in the community.
- **Open Space Planning.** Understand the natural resources through mapping, development of a natural resource inventory, or regular use of tools such as the New York State Environmental Resource Mapper, New York State Environmental Assessment Form Mapper, the Hudson River Estuary Environmental Mapper, or maps available through County real property or planning agencies.
- **Farmland Protection Planning.** Understand where and what type of agricultural activities are taking place in the municipality, involve farmers and the community in developing long range vision and goals for agriculture, and develop strategies to protect critical farmlands.
- **Developing a Natural Resource Inventory (NRI).** Develop this tool which would include maps and information about the natural resources in the community. It can help in understanding what natural resources are in the community and help provide the factual information for development of planning and decision-making, mitigating risks, monitoring and evaluation, and public awareness and education needs.
- **Clean Energy Community (NYSERDA) and Climate Smart Community Programs (NYS DEC).** These programs can aid the community in becoming more resilient to climate change, reduce energy costs, and enhance energy efficiency and resiliency. These programs offer information, technical assistance and funding, as well as an organized set of strategies that can be implemented locally to meet these goals.

Recommended processes to study and plan for solar development. (Pages 21 to 31)

The Following Best Management Practices for Large-scale Solar Facilities That Can Be Implemented

- **Zoning Districts.** One or more zoning districts can be chosen to allow for or prohibit solar facilities or to establish specific siting and development standards. Overlay zoning districts are another districting tool that can target specific locations suitable or not suitable for solar.

A community's comprehensive plan should establish these policies that would then be implemented in the local zoning law.

- **Site Plan or Special Use Permits.** Site Plan and Special Use Permit procedures, which are established in a zoning law, or in a stand-alone site plan review law, are a key tool to allow for careful review and siting of solar facilities.

- **Design and Dimension Standards.** Zoning and/or site plan laws should detail community performance expectations for solar in terms of locating, and conserving the following features:

1. Critical, Rare and Significant Habitats.
2. Wetlands, Water Bodies and Floodplains.
3. Stepping Stone, Matrix, and Linkage Forests.
4. Cultural and Historic Sites.
5. Prime Agricultural Lands.
6. Conservation Areas and Nature Reserves.
7. Scenic and Aesthetic Values.
8. Use of Landscaping for Screening. Screening is one of the most important elements to consider during development of solar facilities. Type, size, location, and arrangement of plant species must all be considered to create an effective landscaping screen. Landscaping may also need to be combined with use of fencing and/or earthen berms to create enhanced screening.

Standards for Noise, Glare, and Aesthetic Performance. Screening is also important to reduce noise and glare. Noise generated from electrical equipment can be mitigated through careful placement and screening. Glare studies can be part of the application process and indicate what locations need adjustments to siting or additional screening.

Moratoria. These are temporary measures that can be put in place while the community conducts the necessary planning and regulatory updates to establish policies and development standards related to solar development.

Decommissioning Plans. This part of a solar application details how the solar facility will be removed, and the land restored, should be a critical part of every solar facility application that is reviewed.

Battery Storage Facilities. Many solar facilities will include batter storage. These should be reviewed and permitted at the same time as the rest of the solar facility. The same siting and best management practices need to be followed too. Local emergency services should be involved to allow for adequate access for fire and other vehicles and should have the equipment and training available to enable emergency personnel to address fires at these facilities.

Planning for Solar

Planning for solar development is essential for addressing environmental challenges while allowing for the benefits such as promoting economic growth, enhancing energy security, and fostering a sustainable and resilient energy future. Communities can plan for solar development that aligns with their specific needs, values, and goals. Inclusive stakeholder engagement and a well-thought-out strategy contribute to the successful implementation of solar projects at the community level.

Planning for solar development at the community level involves a combination of strategic considerations, stakeholder engagement, and practical steps. Development or updating of a municipal comprehensive plan is a primary tool to start planning for solar. There are other planning efforts that can be done as well including development of an open space plan, agricultural and farmland protection plan, natural resource inventory, conducting a local solar capacity analysis, or joining efforts such as New York's Clean Energy Community or Climate Smart Community programs.

ScenicHudson.org has developed a mapping tool and a companion worksheet (How to Solar Now) to aid community development in support of smart solar planning. Major steps advanced with this tool include assessing existing development patterns, identifying opportunities for solar development on exiting development or previously disturbed lands, identifying locations for solar that minimize negative impacts to valued resources and accessing solar feasibility and interconnection potential.

Site Plan Review Or Special Use Permit Step Checklists

The following chart may be useful during Planning Board review of a proposed large solar facility. It includes the major steps a Planning Board would take as well as where in this guide further information on that topic may be found (click on the term).

Reference Page in this Guide	Review Steps	X
21	**Review Zoning Compliance –** Verify that the proposed solar facility complies with the zoning regulations of the specific district where it is planned. This includes considerations such as setbacks, maximum height, land use designations, and any other relevant zoning requirements.	
21	**Assess Site Layout and Design –** Evaluate the site layout and design of the solar facility. Considerations may include the arrangement of solar panels, access roads, fencing, and landscaping. Design elements should be compatible with the surrounding environment and minimize visual impacts.	
17-18, 21-23	**Evaluate Setback Requirements –** Evaluate and or specify setback requirements to establish appropriate distances between the solar facility and property boundaries, roads, water bodies, other sensitive areas, and incompatible adjacent land uses. Setbacks are crucial for minimizing potential adverse impacts.	

continues

Reference Page in this Guide	Review Steps	X
9, 14, 17-18, 21, 23, 26	**Public Access and Safety –** Evaluate the impact of the solar facility on public access, safety, and emergency response. Consider fencing, signage, and other safety measures to protect the public and emergency responders. Ensure that local emergency responders have access to all internal locations. This is particularly important if battery storage facilities are part of the proposal.	
23-30	**Environmental Impact Assessment** via SEQR (State Environmental Quality Review) **–** Conduct an environmental assessment as part of the site plan review process. Assess the potential impacts of the solar facility on the natural environment, wildlife habitats, water resources, and other ecological and environmental factors, including consistency with a comprehensive plan and community character. For large-scale projects, a Full Environmental Assessment Form (FEAF) is usually required.	
	Request Additional Information or Studies – Both local regulations and SEQR processes usually require additional studies of a proposed solar facility. These aid in determining whether any potential adverse environmental impacts may occur and in determining consistency with local site plan and special use criteria. Through the local review and SEQR process, the municipality can evaluate aesthetic impacts by requiring photosimulations and viewshed analyses and then implement measures to mitigate the visual impact of the solar facility. This may include moving, limiting location of panels, or use of landscaping, screening, or design features that help integrate the facility into the surrounding landscape. This is also the phase where the community would assess the compatibility of the solar facility with agricultural activities, especially in areas designated as a New York State Certified Agricultural District. Special considerations may be needed to protect prime agricultural land. Town review and environmental impact assessment also generally includes evaluation of Site Plan Sheets (existing conditions, grading, erosion/sedimentation, landscaping, etc.) and the following:	
7, 9, 27-28	• Noise Study and Potential Mitigation	
9, 27-28	• Glare Study and Potential Mitigation	
9, 19. 23, 25	• Cultural and Historical Resource Inventory/Study and Preservation Needs	
7, 17, 19, 22-25	• Wildlife and Plant Inventory of Species on Property Including Listed Species, Critical Wildlife Habitats, Important Forest Areas, Riparian Buffer Areas, Other Biodiversity Information and Conservation Area needs	

continues

Reference Page in this Guide	Review Steps	X
7, 17-19, 21-23, 27-29	• Visual Impacts Study including Viewshed Map to Show What Locations Will be Able to View Proposed Location and photosimulations	
7, 19, 22, 24-26	• Stormwater Pollution Protection Plan (SWPPP)	
9, 14,19, 24	• Wetland Disturbance Plan	
7, 19, 26, 30-31	• Decommissioning Plan, including Operations and Maintenance Plan	
28-30	• Landscaping Plan	
6, 8, 17, 21, 25-27	• Agricultural Resources and Buffering	

Role of Local Government in Regulating Large-scale Solar Facilities

Solar Facilities and Public Utilities

Some solar projects are being proposed as a public utility. This is significant for local governments to consider because many zoning laws define and allow for public utilities in all locations throughout a Town, whereas solar facilities may be allowed only in limited locations or under certain circumstances. In some cases, a community may have solar regulations, but if a solar project was deemed a public utility, then the zoning may not provide the regulatory control as expected. There is pertinent case law that has been used to set legal precedent classification of a solar facility as a public utility and local governments should be aware of this.[2] When crafting land use regulations, the municipality should pay careful attention to its definitions of both solar facilities and public utilities.

Local Regulation and Permitting versus State Regulation and Permitting

Understanding the regulatory environment of solar energy facilities is of great importance. Small-scale solar installations (see Tier 1 and Tier 2 definitions in the glossary) can be permitted without regulations or regulated by local governments through a local solar law or a zoning law. Large-scale facilities may also be able to be regulated by the local community depending on the proposed energy generating capacity: Large-scale/Tier 3 solar energy facilities that produce 25 megawatts or more of electricity are regulated by New York State through a State-level siting process (Section 94-C) administered by the Office of Renewable Energy Siting (ORES). Projects between 20 and 25 megawatts may opt-in to the ORES review process. Thus, local governments cannot regulate these large-scale solar projects, but can regulate those that are < 20 megawatts. Pursuant to Section 94-C, ORES considers whether the proposed

[2] W. Beekmantown Neighborhood Ass'n, Inc. v. Zoning Bd. of Appeals of Town of Beekmantown, 53 A.D.3d 954, 956 (3rd Dep't 2008)(upholding the Town's determination that wind turbines were a public utility and therefore fell within the Town's Zoning Code definition of essential services); Wind Power Ethics Group (WPEG) v. Zoning Bd. of Appeals of Town of Cape Vincent, 60 A.D.3d 1282, 1283 (4th Dep't 2009)(upholding the Town's determination that wind powered generators were a utility under the Town's zoning law); Cellular Tel. Co v. Rosenberg, 82 NY N.Y.2d 364, 371 (1993) (determining that public utilities include electric, gas, water and cell phone service and related antennae); and a recent case out of NYS Supreme Court, Greene County, held that solar energy projects have been held to be public utilities due to the essential nature of the service they provide (i.e., the production of energy for use by the general public) - Mtr. of Freepoint Solar LLC v. Zoning Bd. of Appeals of Town of Athens, 2022 N.Y. Misc. LEXIS 8915 (Sup. Ct. Greene Cty. 2022).

solar facility is designed to be sited, constructed and operated in compliance with applicable local laws and regulations, if any, concerning the environment, or public health and safety.

Public Engagement

Public engagement is a foundational step for any planning effort. Engaging the public during solar planning and proposed project review is a critical activity. Public engagement fosters community involvement and allows residents, businesses, and other stakeholders to have a say in the decision-making process. It ensures that the perspectives and concerns of the local community are considered. Open and transparent communication builds trust between project developers, local authorities, and the community. Engaging the public early and throughout the process during both planning and project review helps in establishing transparency, reducing skepticism, and promoting trust. The local community often possesses valuable knowledge about the area, including environmental considerations, cultural heritage, and other factors that may influence solar development. Engaging the public allows for the collection of this local knowledge.

Public engagement helps identify and address potential concerns and issues. This proactive approach allows the community to plan for solar, or during project review, allows developers to incorporate community feedback and make adjustments to mitigate negative impacts. Engaging the public helps mitigate opposition to the project by providing an opportunity to address misconceptions, share information, and clarify any misunderstandings. It allows for a more informed and supportive community. Public engagement is a fundamental aspect of responsible and sustainable solar facility development. Although citizen involvement can be complex and time consuming, it helps create a more inclusive, transparent, and informed decision-making process that considers the needs and preferences of the local community.

Comprehensive Planning

A comprehensive plan can address solar development by incorporating specific strategies and policies related to solar energy for the community. Here are several key considerations when developing a comprehensive plan to promote best management practices and address solar development:

- **Community Engagement –** Involve the community early in the planning process to address concerns, gather input, and understand challenges, barriers and opportunities.
- **Solar Capacity Analysis and Infrastructure Planning –** Assess necessary road and electric infrastructure in the municipality. Use and understand solar capacity by viewing the Utilities Hosting Capacity Map. Collaborate with local utilities to understand where and how the grid can accommodate increased solar capacity. Conduct an analysis (see more on Solar Capacity Analysis, below) that would help the community identify where solar development may be appropriate based on natural resources and infrastructure.

  Planning for solar development in a municipality involves a comprehensive and strategic approach to integrate solar energy into the community as described above in this Guide. Local municipalities can undertake an analysis through mapping to understand and identify suitable (or not suitable) locations, resources to be protected, evaluate potential impacts to scenic resources, and mitigate or avoid adverse impacts.

Such an analysis needs to be done using Geographic Information System software (GIS) available in many county planning offices and through consultants. Typically, it identifies lands having certain environmental features to be protected as well as those areas that are potentially buildable. Lands considered not appropriate for large-scale solar development could include areas covered in FEMA mapped floodplains, DEC or NWI wetlands and wetland buffer areas, riparian buffer areas, areas with slopes >15%, areas identified in local or regional plans as high priority for preservation, or dense or unfragmented forests. Some communities carefully consider preservation of prime farmland soils and active farmland as well.

The next step to determining solar capacity is to apply solar development criteria to identify potentially desirable locations for solar such as those lands that are within 3 miles of an electrical substation, within 1000 feet of a three-phase power transmission line and having a south-facing aspect. These lands would be considered most favorable due to accessibility to the electric grid. Use of the Utility Hosting Capacity Maps in this analysis can be an important tool in this step.

Given that aesthetic and scenic impacts are often a very important concern in many rural communities, it is recommended that a solar capacity analysis also evaluate or inventory scenic resources. The steps to conduct a scenic evaluation include:

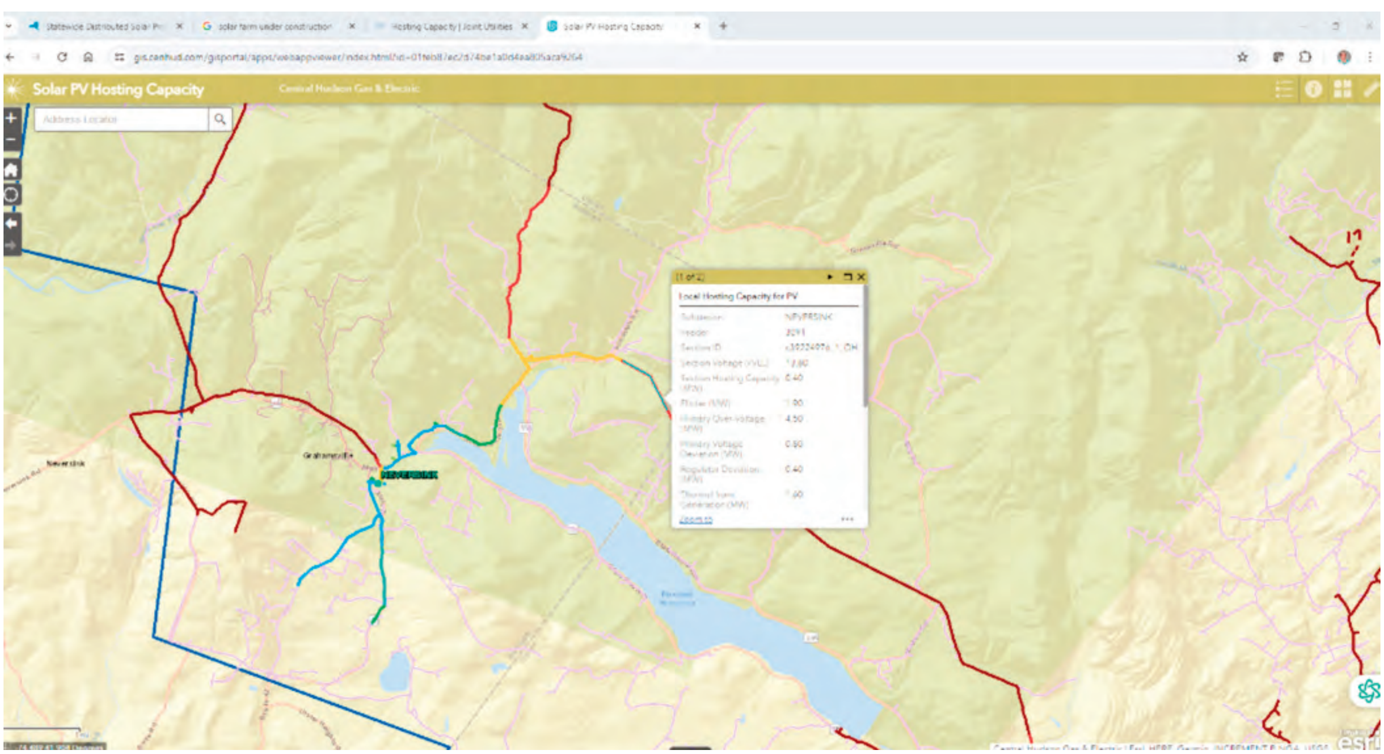
1. Define the Scenic Area(s) – Identify and define important scenic areas in Town. This task is best done in the context of comprehensive or strategic planning described above. Scenic areas are based upon community input and identification of viewpoints from public areas such as roads, parks, public lands or municipal properties. Public and stakeholder Input through public meetings, surveys, or workshops will help identify community perspectives about scenic or aesthetic views.

2. Viewshed Analysis – Conduct a viewshed analysis to identify visible areas from key viewpoints. Use GIS (Geographic Information System) tools to map the areas where the solar facility may be visible. Google Earth is a free tool that can be useful in viewshed analysis.

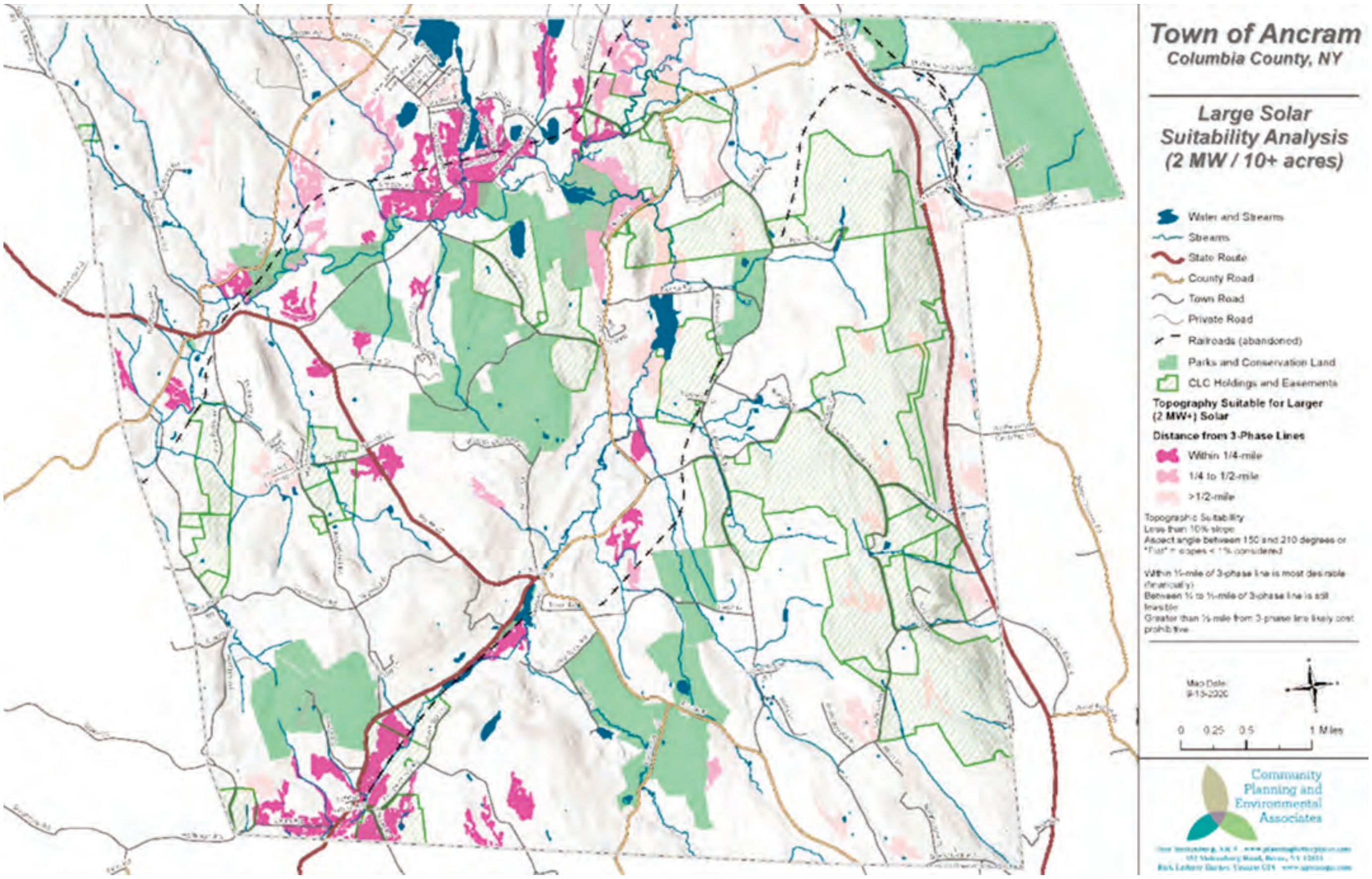
3. Scenic Sensitivity Analysis – The analysis considers the significance of the landscape features, cultural heritage, and recreational value to identify areas with high scenic sensitivity. The GIS allows one to apply factors such as project size, height of structures, color, and reflectivity of solar panels to provide mapped information about locations that may have visual impacts.

4. Create a map showing important viewsheds and viewpoints – These areas can then be protected by limiting solar development in those areas or by requiring incorporation of design and siting criteria (described below).

- **Establish long-term vision and goals** related to solar development. Vision and goal statements should align with the community's energy goals. Align solar development strategies with broader sustainable development and environmental protection and other community goals, such as those set by open space goals, agricultural and farmland protection goals, or if the community is participating, in Climate Smart Community goals. Define and establish goals for what the long-term direction is for community character. Periodically review and update the comprehensive plan to adapt to changing circumstances and opportunities.
- **Establish Zoning and Land Use Policies –** Identify and designate areas that may be suitable for solar development as well as those areas considered not to be suitable. These areas can be designated in zoning through use of overlay zoning districts. Consider implementing a streamlined permitting processes for small scale projects to reduce barriers and encourage timely project implementation. Many small-scale projects on buildings or for



An example of a utility capacity map. The colored lines represent different types of transmission lines (including 3-phase lines where solar may be placed) and the pop-up box offers specific technical information about the capacity of that line for solar development.



Example of a solar analysis done at the local level to identify potential suitable locations for solar facilities to aid in long-range municipal planning.

individual use may be permitted via a building permit only. All regulations should provide clear guidelines and standards for solar installations to ensure safety and compliance, and that community goals are met. Consider ways to integrate solar-friendly building codes that encourage the incorporation of solar panels or building integrated methods in new construction or renovations. Consider design standards that optimize building orientations for solar access.

- **Design Standards –** Consider establishing solar design standards to mitigate the visual impact of large-scale solar installations on the rural and small town character of Catskills Region communities. This may include detailed requirements for landscaping, screening, or architectural design elements that serve to blend the solar facility better with the natural surroundings.

Open Space Planning

An open space plan can address solar development by incorporating strategies that balance the preservation of open spaces with the integration of solar energy projects. Some open space plans are standalone, independent plans, while others are contained as a section within a comprehensive plan. Like comprehensive planning, open space plans also should engage the community in the planning process to gather input on the integration of solar energy within open spaces. Community involvement can help identify priorities, concerns, and potential areas for collaboration. Several ways in which an open space plan can address solar development include:

- **Site Selection Criteria –** Identify suitable areas for solar development within the open space plan.

Consider factors such as sunlight exposure, topography, and proximity to existing infrastructure.

- **Land Use Compatibility –** Evaluate the compatibility of solar development with different types of open spaces. Some areas may be more suitable for large-scale solar installations, while others may be better suited for smaller-scale or community solar projects.
- **Recommend Zoning Regulations –** Zoning can be used to designate specific zones that may or may not be suitable for solar development. This helps guide where solar installations can occur while protecting sensitive natural areas.
- **Establish Buffer Zones and Setback** to protect ecologically sensitive areas, wildlife habitats, stream riparian areas, and scenic landscapes from direct impacts associated with solar development.
- **Promote Dual-Use Practices –** Dual-Use, or Agrivoltaics is a new and growing field that allows combination of solar development with other land uses, such as agricultural or recreational activities. For example, solar panels can be integrated into agricultural fields without compromising food production. There is much research being done now to identify compatible agricultural practices that may allow continued farm use of lands also used for solar.
- **Visual Impact Mitigation –** Visual impacts are often the most important concern a community may have about large-scale solar development. Like a comprehensive plan, an open space plan can also establish design guidelines to mitigate visual impacts of solar installations on the open landscape.
- **Ecological Impact Assessment –** Conduct thorough ecological impact assessments to understand how solar development may affect local flora and fauna. Implement measures to minimize negative impacts and enhance biodiversity where possible. Plans and regulations can call for comprehensive environmental impact assessments for proposed solar projects based on the environmental resources located in the Town.

Agrivoltaics or Dual Use Solar

The American Farmland Trust describes dual-use solar siting, or agrivoltaics, as “the practice of installing solar photovoltaic panels on farmland in such a manner that primary agricultural activities (such as animal grazing and crop/vegetable production) are maintained simultaneously on that farmland.” Dual Use solar facilities can offer many benefits including accommodating grazing (pasture grass), food crops, and honey production. Other benefits of dual-use include offering year round revenue for small farms and increased farm profitability. In a difficult agricultural economy, dual-use solar facilities can be key in helping farmers maintain their agricultural operation. Agrivoltaics has also been shown to improve soil, provide shade for farm workers, maintain ecosystem services, allow for specialty crops or water dense fruits and vegetables without irrigation, provide better yields due to protection from the solar panels, and create microclimate that allows panels to operate more efficiently.

- **Trail and Access Planning –** Plan for public access and recreational opportunities around solar installations, integrating them into existing trail systems or creating new pathways that enhance community engagement with the open spaces.
- **Policy Coordination –** Ensure coordination with other relevant policies, such as energy policies and climate action plans, to create a cohesive and integrated approach to sustainable development.

Farmland Protection Planning

A Farmland Protection Plan can address solar development in a way that supports both agricultural preservation and the integration of renewable


Example of Agrivoltaics. From https://www.nypa.gov/

energy into the community. An agricultural and farmland protection plan, either as a stand-alone document or as part of a Comprehensive Plan, can help identify suitable areas where solar development is compatible with agricultural preservation goals. One important consideration is to recognize that land leasing for solar on farms can provide farmers with a stable income stream that many farmers consider essential to continuing their farm operations. Explore dual-use practices that allow farmland to be used for both agricultural purposes and solar energy generation (See Agrivoltaics Box, below). Develop standards for solar installations that may include considerations for equipment access, irrigation systems, and other farming activities.

The *Smart Solar Siting on Farmland: Achieving Climate Goals While Strengthening the Future for Farming in New York* report developed by the American Farmland Trust aptly recognizes that cropland, hay and pastureland make up the majority of land suitable to host solar farms and concluded that "…New York could convert as many farmland acres to solar development in the next 15 years as was lost to all residential, commercial and other land uses between 2001-2016." And they state, "In response to the acceleration of solar development in New York state, local communities, farmers, and other stakeholders are raising important questions about how to accommodate this new land use in ways that maximize positive benefits and minimize negative impacts on farmland, the farm economy, food security, and rural livelihoods.

Like other plans, a farmland protection plan (or section of a comprehensive plan) can also address:

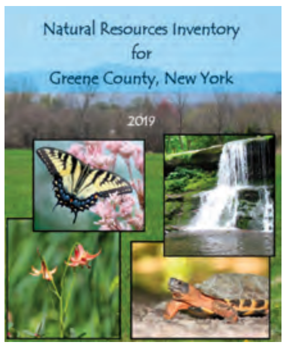
- Development on prime farmland soils
- Setback requirements
- Use of agrivoltaics (dual-use)
- Visual impact mitigation
- Use buffers and screening
- Require creation of pollinator-friendly habitats
- Institute requirements for soil conservation practices
- Require monitoring after construction
- Establish per acre fees for solar development based on soil classification and the percentage of farmland soils to be impacted with fees to be used to protect farmland and continued farm viability. These could include loans, business planning, legal support, capital projects needed for

farm viability, technical soil conservation assistance, etc.[3]

- Require decommissioning bonds to cover the cost of remediating soils and restoring farmland

Developing a Natural Resource Inventory (NRI)

A natural resource inventory can play a crucial role in planning for solar development by providing valuable information about the ecological, geological, and hydrological characteristics of an area. By using a natural resource inventory as a foundation for planning and regulatory decision-making, municipalities can ensure that solar development aligns with environmental conservation goals and minimizes adverse impacts on critical ecosystems. The inventory provides a data-driven approach to inform plans and regulations that protect natural resources while allowing for sustainable solar development.



A natural resource inventory can guide solar development by:

- Site Suitability Analysis – Identify areas within the natural resource inventory that are suitable for solar development based on factors such as sunlight exposure, topography, and soil conditions.
- Sensitive Habitat Protection – Use the inventory to identify and protect sensitive habitats, wildlife corridors, and biodiversity hotspots.
- Water Resource Protection – Assess the impact of solar development on water resources, including wetlands, streams, and aquifers.
- Erosion and Soil Conservation – Evaluate the soil characteristics and erosion potential in the inventory.
- Visual Impact Assessment - Use the inventory to assess the visual impact of solar projects on the landscape.
- Cultural and Historic Resources – Identify cultural and historic resources within the natural resource inventory.
- Wildlife Corridor Preservation – Identify wildlife corridors. This will help limit solar development in areas crucial for wildlife movement.
- Wetland and Floodplain Protection – Use the inventory to map wetlands and floodplains to avoid disruptions to hydrological systems and protect against flooding.
- Vegetation and Land Cover Analysis – Analyze vegetation and land cover data to understand the existing ecosystem.

Clean Energy Community (NYSERDA) and Climate Smart Community Programs (NYS DEC)

NYSERDA's Clean Energy Siting Resources offers several resources to help local governments with knowledge, training, and best practices to manage clean energy development in their communities. They offer step-by-step instructions and tools to guide the implementation of clean energy, including permitting processes, property taxes, siting, zoning, and more. Through NYSERDA's Build-Ready Program, local governments can partner with NYSERDA to turn underutilized land into a renewable energy project. The program is an initiative designed to support and recognize local governments that take action to reduce energy use, cut costs, and promote clean energy.

The New York State Climate Smart Communities program also helps local governments take action to reduce greenhouse gas emissions and adopt to changing climate, of which solar development is one action. The program provides a framework and

[3] See The New York Smart Solar Siting on Farmland: Achieving Climate Goals While Strengthening the Future of Farming in New York report (WEBSITE) for more details.

resources for municipalities to address climate change challenges and work towards sustainability goals. They offer financial and technical support to local governments such as climate smart communities coordinators, the DEC Municipal Zero-Emission Vehicle (ZEV) Program, and DEC Climate Smart Communities grants.

Key components of the NYS Climate Smart Communities program include a climate smart pledge, a certification program to incentivize implementation of climate resiliency actions, technical assistance, networking and collaboration, and recognition of local efforts. Overall, the NYS Climate Smart Communities program encourages local governments to play a proactive role in mitigating climate change impacts and building more sustainable and resilient communities.

Best Management Practices for Small-scale Projects

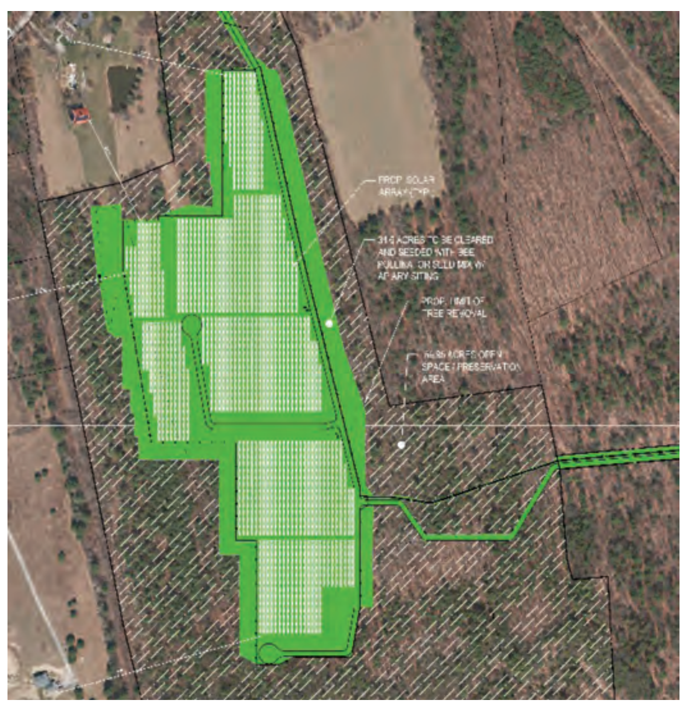
Most communities permit, as of right (with no planning board review) roof-mounted or building integrated solar systems and their associated battery storage systems. Many communities also permit, as of right, small scale ground mounted solar systems, which often require only a building permit.

The New York State Unified Solar Permit can be used to facilitate development of these systems. The New York State Uniform Solar Permit is a standardized permit designed to streamline and simplify the process for installing small scale solar energy systems in New York. The standardized permit is expected to cut costs by creating a uniform permitting process in municipalities across the State.

NYSERDA's Solar Guidebook for Local Governments is a resource for other best management practices for small scale systems and has extensive information on labeling, grounding, structural, electrical and other installation options and a copy of the NYS Unified Solar Permit application. As per the New York State Uniform Fire Prevention and Building Code, there are specific standards in place for rooftop use of solar panels and building integrated photovoltaic systems.

Best Management Practices for Regulating, Siting and Managing Large Solar Facilities

Zoning and other land use regulatory tools can be effective in controlling solar facilities to ensure responsible and compatible development. Some Catskills Region communities do not currently have zoning regulations but often have site plan review laws in place that can be used to guide solar siting. While it is recommended that solar regulations be included within a zoning law, stand-alone solar regulations that rely on site plan review and



A concept plan for a solar project

permitting can address many (but not all) of the performance standards the municipality may want to address. Unlike a zoning law, a site plan law can address various siting standards, but would not be appropriate for establishing lot sizes, lot coverage, setbacks, and other dimension requirements that may be desired – that is the realm of a zoning law.

This section describes several regulatory and other tools and methods that can be utilized to control and enhance siting of solar facilities:

Use of Zoning Districts

A municipality can identify specific zoning districts where solar facilities are permitted. An alternative is to establish solar overlay districts that are specifically designed to allow for solar development in certain locations. Overlay districts are applied on top of existing zoning districts and often include additional or different regulations, performance expectations, or incentives tailored to solar projects. Base zoning district or overlay district locations should be based on factors such as land use compatibility, environmental resources, topography, sunlight exposure, and existing electrical grid infrastructure. Overlay districts that are established to promote large-scale solar development can include regulations that promote shared solar access, dual-uses, community solar and collaboration with local residents.

Use of Site Plan or Special Use Permits

Large-scale solar facilities are often required to have both site plan review and a special use permit from the local municipality (when zoning laws are established). Site plan review and approval addresses the siting of the various components of a solar project such as panels, inverters, access roads, fencing, electric poles, signs, screening, and battery storage. Special Use permits address the functioning of that use on the proposed parcel and evaluate criteria to determine how harmonious or consistent the solar farm would be in that neighborhood or district. This allows local authorities to evaluate each proposal on a case-by-case basis, considering factors like project size, location, and potential impacts.

Special use criteria related to solar facility development typically refer to specific conditions or considerations that must be met for the approval of a special use permit allowing the establishment of a solar energy facility. The criteria for obtaining a special use permit vary by jurisdiction, but typically include the following considerations related to solar facility development:

- Adherence to and consistency with local plans, such as a comprehensive plan
- Compatibility with adjacent land uses
- Avoidance or mitigation of adverse environmental impacts
- Design and dimensions that mitigate visual impacts, preserve important resources, and protect the environment (see next section)

Design and Dimension Standards

Setback and Buffer Requirements – Minimizing the environmental impact of large-scale solar farms requires careful planning and consideration of the unique characteristics of the proposed site. Setback requirements can play a crucial role in achieving this goal. Through zoning, a municipality may have setback requirements to establish appropriate distances between solar installations and property lines, roads, or other sensitive areas. Setbacks help address safety, aesthetic, and compatibility concerns.

The specific setback may vary depending on local regulations, environmental considerations, and the type of solar facility and adjacent land uses. Different places, and different districts may require different setbacks. For example, a large setback may be needed to adequately separate a large-scale solar facility from a residential area. Large setbacks on a farm may require too much land to be set aside and take away from farming or dual-use opportunities.

There is no one-size-fits-all setback distance, but they should be established to provide adequate buffers, placement of screening, where needed, and mitigation of views[4]. Usually, screening is required within the setbacks, and these could be planted landscaping or maintenance of forest or other natural vegetation. Solar arrays should be placed to minimize visual impact, taking into account the natural features of the site.

Here are some other setback and dimensional considerations that can be used to minimize environmental impact:

Example of full screening along a road (above), compared to example of a solar facility with no screening

- **Buffers –** Setbacks from property boundaries help maintain a buffer zone between the solar facility and neighboring properties. Adequate setbacks can reduce visual impact and address concerns related to land use compatibility.
- **Water Bodies and Riparian Zones –** Establish setbacks from water bodies, rivers, streams, and riparian zones. These setbacks are crucial for protecting water quality, preventing soil erosion, and preserving aquatic habitats in mountainous regions.
- **Slope Stability –** Consider setbacks based on slope stability assessments. In mountainous areas, the terrain may be prone to landslides or erosion. Adequate setbacks can help minimize the risk of soil disturbance and instability.
- **Scenic Views and Aesthetics –** Setbacks designed to preserve scenic views and aesthetic values are important, especially in mountainous regions and areas with elevated terrain. Maintaining visibility of natural landscapes and minimizing the visual impact of solar facilities contributes to environmental conservation and preservation of community character.
- **Wildlife Corridors and Habitats –** Identify where they are, and then establish setbacks from wildlife corridors and habitats. This helps protect biodiversity and allows for the movement of wildlife through natural pathways without disruption. All large-scale solar facilities are fenced, and the type and location of fencing can have a big impact on local wildlife. Wildlife-friendly fencing, which allows for passage of small animals along the ground, is common and should be required. Municipalities should carefully evaluate the solar site in relation to other habitats and environmental resources nearby. Habitat fragmentation will lead to decreased biodiversity in an area. Careful placement of fencing can maintain wildlife travel corridors and important links between locations and habitats.

[4] Note that very large setbacks may actually prevent effective use of a solar facility for agrivoltaics. In the context of agriculture, use of setbacks on farms when dual use or agrivoltaics is proposed should be carefully considered.

- **Cultural and Historic Sites –** Consider setbacks from cultural and historic sites. These setbacks help preserve archaeological resources, historic structures, and landscapes with cultural significance.
- **Public Access and Recreation Areas –** Setbacks from public access points, hiking trails, and recreational areas should be considered to ensure that solar facilities do not interfere with outdoor activities and public enjoyment of the landscape.
- **Geological Features –** Setbacks from geological features, such as cliffs or rock outcrops, should be considered to protect these natural formations and minimize disturbance to the landscape.
- **Solar Access –** Implement dimensional regulations that protect solar access for neighboring properties. Ensure that solar facilities do not cast shadows that significantly impact adjacent properties' access to sunlight. On the other hand, ensure that other kinds of development do not adversely affect the ability of residences and businesses to place roof-mounted or ground-mounted small scale systems.

Height Restrictions – Height restrictions for solar structures are set to ensure that installations are compatible with the surrounding landscape and do not create visual obstructions. While many rural zoning laws establish a 35’ height limitation, most solar regulations cap heights at 15’. Note that dual use or agrivoltaics often require higher dimensions to allow for grazing or equipment use under and around panels. Carefully consider height allowances if agrivoltaics is required or proposed.

Design and Siting Standards to Protect Environmental Resources – Certain environmental resources may be too sensitive to allow for solar facility development due to their ecological, cultural, or conservation value. Planning, as described above in this Guide, will help the municipality identify the sensitive environmental resources in the community that should be protected during large-scale solar development.

When planning for solar facility development, it's essential to conduct thorough site inventories and environmental impact assessments to identify and avoid sensitive areas. Project developers and planners should work closely with regulatory agencies, environmental experts, and local communities to ensure responsible and sustainable development practices that minimize adverse impacts on sensitive environmental resources.

Design standards for solar facility development play a crucial role in ensuring responsible, aesthetically pleasing, and environmentally sensitive projects. The specific design guidelines can vary based on local regulations, community preferences, and the unique characteristics of the site.

Environmentally Sensitive Features of Importance

Some environmentally sensitive areas of importance to be considered in the Catskills Region include:

A. Critical, Rare and Significant Habitats

Information is readily available to identify a variety of ecological resources in the community. Habitat and species information that is readily available include Important Bird Areas (Audubon); areas of known importance for rare plants, rare animals, and significant natural communities at The New York Natural Heritage Program; endangered/threatened/special concern species (New York State DEC), Forest Condition (New York Natural Heritage Program); and others can be found through many state, federal and regional resources. Many of these critical habitats are highly sensitive and identification and avoiding siting large-scale solar facilities in or near these habitats should be part of development standards. See Mapping Resources for helpful mapping sources.

B. Wetlands, Water Bodies and Floodplains

Wetlands, streams and rivers, and lakes and ponds play a crucial role in supporting biodiversity, water quality, and flood control. Some of these resources may be protected under the federal Clean Water Act and New York State regulations. Siting of large-scale solar facilities should be directed away from placement in or near wetlands and water bodies, and in areas highly susceptible to flooding. Buffers around or along these features are important to maintain habitats and ecological functioning. Floodplains are important for flood control and maintaining water quality. Riparian zones, located along rivers and streams are also critical for maintaining water quality, providing linkages with other habitats, preventing erosion, and are important wildlife travel corridors. Siting standards should include restrictions of solar development in these areas to both protect aquatic ecosystems and link fragmented habitats together.

C. Stepping Stone, Matrix, and Linkage Forests

Large forests provide numerous benefits including wildlife habitat, clean water, climate moderation, and forest products. In general, larger forests provide higher quality habitat and greater benefits than smaller ones. However, the value of each forest is relative to the values of surrounding habitats. For

Map showing extent of matrix forest areas

example, a series of forest patches along a stream helps maintain water quality while creating a wildlife travel corridor. Similarly, wooded hedgerows in farm fields often provide a refuge for animals moving through the landscape.

Smaller 'stepping stone' forests, especially when close enough to each other, can form links between larger forests and provide valuable, broad corridors for wildlife movement and plant dispersal. These smaller forests enable a large array of species, including both wide-ranging and forest-interior species, to move safely from one habitat to another. Many large-scale solar facilities are being proposed in forested areas, and great care should be taken to prevent loss of biodiversity and forest fragmentation. Protecting these corridors helps ensure the survival of wildlife populations.

Smaller forests have limited habitat value for forest interior bird species, are less viable for timber management, and are more exposed to impacts from development. Forests as small as 200 acres will support some forest-interior bird species, but species that prefer "edge" habitats will dominate smaller patches. Edge forests have more invasive species, increased predation levels, and micro-climatic differences. However, these are also areas used by wildlife for migration and are critical for maintaining genetic diversity and allowing species to adapt to changing conditions.

Regardless of size or habitat values, all forests and trees in the town help to manage stormwater, moderate temperature, and improve air quality, among other ecosystem benefits.

D. Cultural and Historic Sites

Areas with cultural or historic significance, including archaeological sites, burial grounds, or sacred lands, are sensitive and should be protected to preserve cultural heritage. Many communities have local inventories of these resources, especially as part of comprehensive plan documents or historic district documentation. Visit the New York State Cultural Information System (CRIS) to access the statewide data base and maps of historic resources that may be identified for the community.

E. Prime Agricultural Lands

Prime agricultural lands, which can be in short supply in many places throughout the Catskills Region, have high-quality soils, are crucial for food production, and should be protected to maintain long-term agricultural sustainability. Regulating solar facilities to protect agricultural values involves implementing policies and measures that balance the development of solar projects with the preservation of agricultural lands. NYSERDA offers guidance on solar installations on agricultural lands. Use of agrivoltaics is increasingly becoming more important to balance agricultural and renewable energy needs.

The key strategies and considerations mentioned in this guide can be used to mitigate adverse impacts of large-scale solar facilities on farming. In particular, consider:

- **Regulations** – Develop or update zoning regulations and land use plans to designate suitable areas for solar development while protecting prime agricultural lands. Implement zoning overlays that consider the compatibility of solar facilities with agricultural uses. Identify non-prime agricultural lands or marginal lands that are suitable for solar development. Prioritize these areas to minimize the impact on high-quality agricultural soils. Establish setback requirements that prevent solar facilities from encroaching on prime agricultural lands. Plan for agrivoltaics.

- **Agricultural Compatibility Standards –** Develop standards that ensure the compatibility of solar facilities with agricultural operations. Consider factors such as equipment access, irrigation, and crop management when designing and locating solar installations.
- **Leasing Agreements –** Establish clear guidelines for leasing agreements between solar developers and farmers. Ensure that agreements address compensation, land restoration after project life, and measures to protect soil health.
- **Agricultural Impact Assessment –** Conduct an agricultural impact assessment to evaluate the potential effects of solar development on local agriculture. Assess factors such as changes in microclimates, water use, and impacts on crop yields.
- **Land Restoration Requirements –** Include requirements for land restoration in solar facility permits. Specify procedures for decommissioning solar projects and restoring the land to its agricultural use after the end of the project's life.
- **Soil Conservation Practices –** Integrate soil conservation practices into solar facility development. Implement measures such as erosion control, sedimentation prevention, and vegetation cover to protect soil health.
- **Engage with Agricultural Stakeholders –** Collaborate with agricultural stakeholders, including local farmers, Cornell Cooperative Extension, Soil and Water Conservation Districts, and farming groups such as the Young Farmers Coalition or New York Farm Bureau. Seek their input, address concerns, and incorporate their expertise into the regulatory process.
- **Use NYS Department of Agriculture and Markets Guidelines for Solar Energy Projects:**

NYS Department of Agriculture and Markets Guidelines for Solar Energy Projects – Construction Mitigation for Agricultural Lands

The Department has developed guidelines for mitigating construction impacts on agricultural lands for all phases from construction to decommissioning. These guidelines call for use of an environmental monitor and offers construction requirements, post-construction restoration, monitoring and remediation, and decommissioning.

Notice of Intent Process

An important provision of the New York State Agricultural Districts Law (25-aa) is the mandate it places on state agencies, local governments, and public benefit corporations to avoid or minimize adverse impacts to farm operations within an agricultural district, for actions that involve either the acquisition of farmland or the advance of public funds for certain construction activities. Department staff regularly conduct detailed reviews of notice documents provided by project sponsors and recommend mitigation or remedial action where necessary. Such projects cannot proceed until the notice process is completed. Staff provide pre-application information to project sponsors on specific agricultural resource concerns in the project area. Department staff also review project Environmental Impact Statements for potential agricultural resource impacts. This involves reviewing proposed sites to determine if the project will be located on agricultural land and reviewing proposed construction plans to determine potential impacts to agricultural resources. Staff conducts on-site reviews during construction and restoration to assess level of compliance with stipulations and permit conditions for construction involving agricultural land.

F. Conservation Areas and Nature Reserves

Rare habitats and sensitive environmental resources located on lands already protected via a conservation easement or fee simple ownership by an agency such as New York City, New York State or a land trust should be restricted for development of large-scale solar facilities. Not all areas would allow for solar development, but if they do, care should be taken to identify critical resources and site solar facilities in a way that avoids these areas.

G. Scenic and Aesthetic Values

Areas with significant scenic or aesthetic value, such as parks, scenic byways, locally designated scenic roads, or views of mountain peaks and other important landscapes from public locations are another resource important to Catskills Region communities. Local solar regulations, and siting of a facility should include the need to identify and either restrict solar development or institute screening should be part of regulatory requirements or permitting conditions to preserve their visual quality.

Standards for Noise, Glare, and Aesthetic Performance

Large-scale Solar regulations should define performance standards that address specific potential impacts of solar facilities, such as glare, noise, and visual appearance. Establish clear guidelines to mitigate potential concerns and ensure responsible development.

- **Noise.** The noise levels generated by large-scale solar facilities are low compared to many other industrial activities. Solar photovoltaic (PV) systems, which convert sunlight into electricity, typically produce minimal noise during their operation. The main sources of potential noise in a solar facility are usually associated with auxiliary equipment such as inverters, cooling systems, and transformers. The noise levels can vary depending on the specific components and design of the solar facility. In general, the sound produced by these components is low and may not be audible at a significant distance from the facility. Noise impacts depend on surrounding uses and their proximity to noise-generating components of the solar facility. When needed, inverters can be placed away from noise receptors (houses, for example), or placed with significant vegetation or other screening that can serve to decrease noise.
- **Glare.** Glare from solar facilities can have several adverse impacts, although it is important to note that these effects can vary depending on factors such as the size and design of the facility, the location, and the surrounding environment. Glare can be an issue however and can cause visual discomfort, safety concerns for drivers, particularly if the facility is located near roadways. Glare could potentially reduce visibility and lead to

safety concerns for motorists. Glare can affect neighboring properties, especially if the solar facility is positioned in a way that directs sunlight towards residential or commercial buildings. Glare can also have ecological implications, potentially affecting wildlife in the area. For example, birds or insects may be disoriented by intense reflections, which could impact their behavior and well-being.

Another lighting consideration is nighttime lighting. Not all large-scale solar facilities include outdoor nighttime lighting, but when they do, ensure that lighting design minimizes light pollution and visual disturbance.

To mitigate these adverse impacts, solar facility developers often incorporate design features and technologies to minimize glare. This may include using anti-reflective coatings on solar panels, adjusting the tilt and orientation of panels to reduce reflective angles, or implementing landscaping and screening measures to shield neighboring properties from direct sunlight. Local regulations and guidelines may also address glare concerns associated with solar facilities, and developers typically work to comply with these standards to minimize negative impacts on the surrounding community and environment. During solar project review, Planning Boards should be sure to ask for data and information on glare and lighting so that adverse impacts can be mitigated.

- **Aesthetic Design and Screening Guidelines.** Develop aesthetic design guidelines for solar facilities to ensure that installations complement the character of the surrounding area. Guidelines may include color, landscaping, and architectural considerations. Some strategies to mitigate aesthetic impacts include:

  1. Site Selection and Design – Select sites for solar development that are compatible with the surrounding landscape and minimize visibility from sensitive areas.
  2. Consider Topography – Utilize the natural topography to integrate solar facilities into the landscape more harmoniously. Avoid placement of solar panels at the highest elevation that will be more readily viewable and use topography to hide as much of the facility from public view as possible.

3. Aggressively Use Landscaping and Vegetation – Use natural buffers or landscape plantings around the perimeter of the solar facility to act as a natural buffer, screening the view and softening the visual impact. In rural areas, a single line of evergreen trees, which are often proposed on a large-scale solar facility, are often not adequate, nor a natural-looking barrier. Avoid landscaped screening that in and of themselves appear to be 'unnatural.' All landscaping should incorporate native vegetation to maintain the ecological balance and enhance the aesthetics of the site.

4. Require use of materials with low reflectivity to minimize glare and make the facility less conspicuous. Install fencing, walls, or other screening structures to visually conceal the solar facility in places having significant public views or to screen adjacent residential uses. All fencing used for screening should be designed in a way that complements the landscape and minimizes visual intrusion.

5. Ground cover in and around solar panels is usually low, herbaceous vegetation. Such facilities have an opportunity to promote meadow habitats for small mammals, and pollinator-friendly insects. Design standards should require use of agrivoltaics when a dual use for agriculture is appropriate, or use of pollinator-friendly seed mixes.

6. Choosing a pollinator-friendly seed mix for solar farms in New York State is important to support biodiversity and contribute to ecosystem health. Such vegetation not only provides habitat for bees, butterflies, and other pollinators but also enhances the aesthetics of the solar farm. When selecting a seed mix, it's essential to require native plant species that are well-suited to the local climate and soil conditions. New York State has published guidelines for such seed mixes along utility corridors that can be extremely helpful when planning for use of pollinator-friendly seeding. Solar Project Sponsors are encouraged to restore native pollinator habitat per the following guidelines: 1) Planning and Site Preparations, 2) Seeding, Planting, & Community Establishment, and 3) Operation & Maintenance (O&M). Here are some examples of pollinator-friendly plants commonly used in New York State:

   - Wildflowers – Include a variety of native wildflowers that bloom at different times of the year to provide continuous food sources for pollinators. Examples include Black-Eyed Susan (*Rudbeckia hirta*), Purple Coneflower (*Echinacea purpurea*), New England Aster (*Symphyotrichum novae-angliae*), Goldenrod (*Solidago spp.*), and Bee Balm (*Monarda spp.*)
   - Grasses – Native grasses can provide structure and support for pollinators. Consider including species such as Little Bluestem (*Schizachyrium scoparium*), Switchgrass (*Panicum virgatum*), Indian Grass (*Sorghastrum nutans*), and Canada Wild Rye (*Elymus canadensis*).
   - Herbs – Certain native herbs can attract pollinators and add diversity to the seed mix. Examples include: Common Milkweed (*Asclepias syriaca*), Wild Bergamot (*Monarda fistulosa*), and Anise Hyssop (*Agastache foeniculum*).
   - Shrubs – Although not included within the area used for panels, some locations within a large-scale solar facility (such as along fences or borders) can successfully integrate native shrubs to provide additional habitat and foraging opportunities. Some shrub species suitable for pollinators are: Buttonbush (*Cephalanthus occidentalis*), Serviceberry (*Amelanchier spp.*), and Winterberry (*Ilex verticillata*).
   - Perennials – Perennial plants offer long-lasting habitat and nectar sources. Consider incorporating: Butterfly Weed (*Asclepias tuberosa*), Joe-Pye Weed (*Eutrochium spp.*), and Swamp Milkweed (*Asclepias incarnata*).

7. It would be helpful to collaborate with local experts, ecologists, and native plant nurseries to select species that are well-adapted to the specific ecological conditions of the Catskills Region solar farm site. Incorporating a mix of plant types with varying bloom periods supports pollinators throughout the growing season. Long-term maintenance of these meadow habitats, however, must be incorporated into long-term operation plans. Too frequent mowing or mowing during the breeding season will be detrimental long-term to pollinator species. It is recommended that no chemicals be used to manage vegetation control, and that mowing only takes place once per year in late September or October.

Use of Moratoria

Moratoria, or temporary halts on certain activities, can be used as a regulatory tool to pause or stop the development of solar facilities. A moratorium is a local law adopted by local town or village boards and applied to various types of land use, including solar energy projects. They are enacted while the community considers and potentially adopts changes to its local plans or land use regulations to address the circumstances and should be considered as a tool that preserves the status quo temporarily. Moratoria have to have a reasonable time frame, usually under one year, must meet a valid public purpose, and must be adopted according to New York State Town or Village law.

Moratoria may be appropriate to establish so that the municipality can have time to:

- Temporarily halt new applications for solar projects or the issuance of permits while the local government reviews and updates its zoning ordinances.
- Establish zoning and land use regulations that govern the types of activities allowed in specific areas.
- Assess and potentially revise existing policies related to solar energy development or develop new guidelines, standards, or regulations that address concerns or issues associated with solar facilities.
- Allow for Public Input and Community Engagement in the decision-making process. Residents and stakeholders can provide input on the potential impacts of solar development and express their concerns on such aspects as aesthetics, property values, environmental impact, or other factors.
- The temporary halt can give local authorities the opportunity to gather information, conduct studies, and assess the potential economic, environmental, and aesthetic impacts of solar projects.
- Moratoria can be used to align local policies with state energy goals and regulations. This may involve ensuring that local ordinances are consistent with broader renewable energy objectives.
- It's important to note that the use of moratoria should comply with legal requirements, and the decision to impose a moratorium should be based on valid planning and regulatory reasons. Additionally, the temporary nature of moratoria implies that they are not permanent bans but are enacted to allow for a careful and informed evaluation of the impacts of solar development on the community and the environment.

Require Decommissioning Plans

Local regulations should include requirements for decommissioning and site restoration at the end of the solar farm's life. These typically Include provisions for removing equipment, restoring the land, and addressing any environmental impacts. See NYSERDA's Decommissioning Solar Panel Systems: Information for local governments and landowners on the decommissioning of large-scale solar panel systems. This guide helps with decommissioning plans, estimated costs associated with decommissioning, and ensuring decommissioning takes place properly. Decommissioning plans include financing and non-financing measures, examples, and a checklist for decommissioning plans that will be helpful to ensure that proposed plans meet these performance expectations.

Battery Storage Facilities

In the past few years, battery storage facilities associated with large-scale solar projects have become more common. Increasing energy storage is a part of the State's Climate Leadership and Community Protection Act (Climate Act). State incentives are provided to accelerate adoption of energy storage systems to help meet peak energy demands. The NYSERDA guidebook offers a model law, model energy storage system permit, electrical checklist, and information on the NYS Uniform Fire Prevention and Building Code. Like solar regulations, battery storage regulations should be developed to meet the needs of each community and to suit local conditions, plans, and existing land use regulations. Like solar facilities, a comprehensive plan should address and establish policy for how battery storage systems should be addressed in the community and what regulatory controls may be needed. Such plans should have a goal, policy statement, actions, and community input on the subject.

A solar battery storage system for large-scale solar refers to the integration of energy storage technology with a large solar power generation facility. This combination allows the storage of excess electricity generated by the solar panels during periods of high sunlight, which can then be used when sunlight is not available, such as during the night or on cloudy days. This is needed for balancing energy supply and demand. Because of the grid connections, this allows the facility to draw electricity from the batteries when solar production is low and feed excess electricity back into the grid when there is surplus generation. Battery storage systems provide grid stability, more energy independence, backup power, and load shifting to meet times of high demand.

Battery storage systems have battery cells, an energy management system, monitoring and controls, cooling and thermal systems, safety systems, and enclosures. Concerns related to battery storage systems include fire hazards, chemical hazards, overcharging and over discharging, and thermal runaway (where, in certain conditions, battery cells heat up and fail consecutively). Other concerns revolve around improper disposal of batteries at the end of their life, cybersecurity, high voltage hazards, and natural disasters such as floods that may affect battery storage facilities. In addition to these hazards, visual impacts can also be a concern that often needs to be addressed.

To address these dangers, industry standards, regulations, and best practices are continually evolving. Implementing comprehensive safety protocols, regular inspections, and ongoing training for personnel can help manage and mitigate the potential risks associated with large-scale solar battery storage systems. Planning Boards should always have input from the fire and other emergency providers in the area about a proposed battery storage facility.

Model Laws

Solar Energy

There are many model solar energy laws existing in New York that can be used to help local communities understand potential options and regulatory structures. Many communities start their solar regulatory planning by using the New York Sun Model Solar Energy Local Law. This can also be accessed through NYSERDA's New York Solar Guidebook.

Some communities have either modified this State model law or created their own regulatory framework to meet the needs of their community. Some are more restrictive than others. Many communities throughout New York have enacted local solar energy laws. Here are a few examples (not necessarily endorsed by the Catskill Center), showing a variety of local regulatory approaches to large solar facilities.

- Town of Minden, NY
- Town of Hunter, NY
- Town of New Scotland, NY and their amendment designed to protect important farm and forest areas.

Battery Energy Storage

NYSERDA has also provided information on battery energy storage facilities in their New York State Battery Energy Storage System Guidebook. Like the model solar law, it serves as a good starting place. Here are a few examples:

- Town of East Greenbush, NY: https://www.eastgreenbush.org/download_file/view/3951/197
- Town of Yorktown, NY: https://ecode360.com/YO1560/laws/LF1214804.pdf
- Town of Riverhead, NY: https://ecode360.com/42320029

Mapping Resources

Several mapping resources are available in New York State that can be valuable for planning for solar policies and identifying suitable locations for solar development. These resources provide information on solar potential, land use, environmental factors, and other relevant data.

Here are some mapping resources:

- ORES (Office of Renewable Energy Siting)
- NYSERDA Clean Energy Siting Tools – The New York State Energy Research and Development Authority (NYSERDA) offers various renewable energy siting tools, including solar maps and interactive tools to assess solar potential in different regions.
- New York State GIS Clearinghouse – The New York State GIS Clearinghouse provides access to a wide range of geographic data, including land use, environmental, and topographic data. Users can download datasets for analysis and mapping.
- New York State Department of Environmental Conservation (DEC) Maps – DEC offers mapping resources related to environmental conservation, biodiversity, and natural resources. These maps can be useful for assessing environmental considerations during solar site selection. Important mapping resources through DEC includes:
  1. Environmental Resource Mapper
  2. EAF (Environmental Assessment Form) Mapper
  3. Hudson River Estuary Environmental Resource Mapper
- New York State Office of Parks, Recreation and Historic Preservation – The Office of Parks, Recreation and Historic Preservation offers maps and resources related to historic sites. These maps can be useful for avoiding sensitive historical or cultural areas.

- USGS Earth Explorer – The U.S. Geological Survey (USGS) Earth Explorer provides access to satellite imagery and remote sensing data. Users can obtain high-resolution imagery for specific locations to assess terrain and land characteristics.
- Resilient Land Mapping Tool – This mapping tool was developed by The Nature Conservancy to help identify climate-resilient sites designed to sustain biodiversity and ecological functions into the future under a changing climate.

Useful References

- Farmland Solar Policy Design Toolkit, U.S. Department of Agriculture (2020)
- Farmer's Guide to Going Solar, Solar Energy Technologies Office, DOE Office of Energy Efficiency & Renewable Energy
- Smart Solar Siting Principles and Examples of Land Use Laws that Support Renewable Energy While Protecting Farmland, American Farmland Trust (2019)
- Low-Impact Solar Development Strategies Guidebook, InSPIRE
- Commercial Solar Development on Farmlands Sustainable Development Code (2020)
- Considerations When Leasing Agricultural Land to Solar Developers Cornell University (2019)
- NYSERDA Solar Guidebook
- NYSERDA Solar Resources for Local Governments
- Scenic Hudson Clean Energy, Green Communities – A Guide to Siting Renewable Energy in the Hudson Valley
- Sustainable Farm Energy Cornell Small Farms Program (2019)
- Solar Energy Industries Association (SEIA) – Community Solar provides information on community solar projects, policy considerations, and resources for communities looking to develop or participate in community solar initiatives.
- National Renewable Energy Laboratory (NREL) – offers resources, tools, and research on solar energy. NREL provides access to solar maps, data sets, and analysis tools that can aid in solar planning.
- U.S. Department of Energy (DOE) Solar Energy Technologies Office (SETO) – provides information on solar research and development. It includes resources for communities, local governments, and businesses interested in solar energy.
- ICLEI – Local Governments for Sustainability – supports local governments in their efforts to achieve sustainability goals. Their resources include guides on renewable energy planning, climate action, and community engagement.
- Community Solar Hub is a platform that offers resources, guides, and case studies to help communities navigate the development of community solar projects.
- The Solar Foundation – SolSmart – is a program by The Solar Foundation that provides resources and recognition for communities working to make solar energy more accessible. It includes best practices and tools for solar-friendly policies.
- American Planning Association (APA) – Planning for Solar Energy Use - offers planning resources for integrating solar energy into community development. It covers topics such as zoning, land use, and community engagement.
- New York State Department of Agriculture and Markets offers guidelines for the creation of native insect pollinator habitat on property developed for energy utility or other commercial enterprises.
- NYSERDA – New York Battery Energy Storage System Guidebook
- American Farmland Trust – What is Dual-Use Solar?
- USDA Climate Hub – Agrivoltaics: Coming Soon to a Farm Near You

Be sure to check with these organizations and agencies as webpages and web content may change over time.

Glossary of Solar Terms

This section offers a brief discussion about the different kinds of solar development that communities are experiencing. These are:

Distributed Solar Facility: Refers to the generation of electricity from solar energy by systems that are installed near the point of use, typically on rooftops, building facades, or within local communities. These systems, often referred to as rooftop solar, allow electricity to be generated close to where it will be consumed, reducing the need for long-distance transmission of electricity from centralized power plants. Distributed solar installations can range from individual residential rooftop solar panels to larger commercial or community solar projects. The electricity generated by these systems can either be used on-site to offset the consumption of electricity from the grid or can be fed back into the grid, providing benefits such as reduced strain on the grid during peak demand periods and contributing to overall grid stability.

Energy Storage Facilities: A solar energy storage battery, also known as a solar battery or solar storage system, is a device that stores electricity generated by solar panels for later use. Solar energy is intermittent, dependent on factors such as sunlight availability, and is typically generated when demand may not be at its highest. Solar batteries address this issue by storing excess energy produced during periods of sunlight for use during times when the sun is not shining, such as at night or during cloudy days. Solar energy storage batteries are more commonly included in large-scale solar facilities but are available to support small-scale facilities too. Common types of solar batteries include lithium-ion batteries, lead-acid batteries, and flow batteries. The choice of battery technology depends on factors such as cost, performance, and specific use case requirements. As technology advances, the efficiency and cost-effectiveness of solar batteries continue to improve, making them increasingly popular for residential, commercial, and industrial applications.

Hosting Capacity: refers to the maximum amount of additional distributed generation that can be accommodated on the grid without negative impacts. Key features, definitions and information found on a utility host capacity map include:

- Location-specific Data
- Capacity Constraints
- Interconnection
- Technical Constraints

Large-scale Solar: A large-scale solar facility is connected to the electrical grid, allowing it to feed electricity directly into the broader power distribution network. Many grid-connected solar facilities fall under the category of 'distributed generation,' as they are dispersed across various locations. Grid-connected solar facilities are connected using existing or upgraded electrical grid infrastructure. Community solar scale facilities may also be considered large-scale.

Net Metering describes when excess electricity generated by the solar facility is fed into the grid, and the owner receives credits for this surplus electricity.

Small Scale Solar: A small-scale solar facility typically refers to a solar energy installation that is designed to generate a modest amount of electricity and while specific criteria defining "small scale" may vary, and it may be defined in terms of the installed capacity, typically measured in kilowatts (kW), it refers to projects that are often used at a single parcel (residential or commercial) level. The NYS Solar Guidebook uses the terms Tier 1 and Tier 2 and these are also general considered 'small-scale'. Other types associated with small scale solar may include:

- **Residential Solar Systems** that are rooftop or ground mounted, and designed to meet the electricity needs of a single household. Ground-mounted solar installations that are designed to produce electricity for individual use are categorized as small scale.

- **Small Commercial Systems** for commercial or industrial buildings, such as offices, warehouses, or factories, and provide on-site power generation for these businesses. Solar projects on municipal or government facilities, educational campuses, schools, colleges, or institutional buildings that generate electricity to meet the facility's energy needs are also 'small-scale.'

Community Solar are grid-connected, commercial facilities that allows multiple users, often from a local community, to benefit from a shared solar installation. Participants subscribe to or purchase a portion of the electricity generated by the solar facility. They are often 2.5 to 5 megawatt systems.

- **Agricultural Solar Systems** are installed on agricultural properties for the purpose of generating electricity for on-farm use. For farms in a New York State Certified Agricultural District, solar systems on farms are considered an agricultural facility (just like a barn or silo) and are allowed to generate up to 110% of the farm's needs.

- **Tier 1** (roof-mounted or building-integrated solar) and **Tier 2** solar energy systems include ground-mounted systems with a capacity up to 25 kilowatts and that generate no more than 110% of the electricity consumed on the site.

Transmission or Hosting Capacity: Planning for solar at the local level often starts with a community understanding the electrical generation capacity that exists in their town. Utilities in New York State are required to provide data and maps that show this capacity – called Hosting Capacity Maps[5]. Hosting capacity maps are interactive and allow users to zoom in, overlay additional data, and explore specific areas in detail. These interactive features are important to both project developers and planners. The goal of a utility host capacity map is to facilitate the efficient integration of distributed energy resources into the grid by providing clear information on where additional capacity is available and where constraints may exist. These maps are valuable tools for project developers, utilities, and other stakeholders involved in the planning and deployment of distributed generation projects in New York State. While there is much technical information offered on the hosting maps, locations of 3-phase and non-3-phase electrical lines, primary hosting capacity, and locations and status of substations can be important in helping a community understand potential for future solar development.

Utility-scale Solar Farms are large-scale solar facilities and are grid-connected. These are also considered Tier 3 solar energy systems as per NYSERDA. Utility companies or independent power producers develop these.

[5] Central Hudson's site is: https://www.cenhud.com/en/my-energy/distributed-generation/hosting-capacity-maps
ConEdison's site is: https://www.coned.com/en/business-partners/hosting-capacity
National Grid's site is: https://systemdataportal.nationalgrid.com/NY
NYSEG's site is: https://www.arcgis.com/apps/webappviewer/index.html?id=84de299296d649808f5a149e16f2d87c

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