

## RESOURCE LIST

### 2018 Municipal Solar Tour Workshop

### Navigating Large-Scale Solar Development in Your Community

#### HUDSON VALLEY REGIONAL COUNCIL

HVRC is the regional administrator for [NYSERDA's Clean Energy Communities Program](#) (CEC Program). Under the CEC Program, HVRC is supporting local governments in the Mid-Hudson Region on various actions related to energy efficiency and clean energy.

- HVRC: <http://hudsonvalleyregionalcouncil.org/>
- CEC Program:
  - [High Impact Action background](#)
  - High Impact Action [Toolkit](#)
  - CEC Program [Submission Portal](#) for completed actions
- Economic Development and Data:
  - [Comprehensive Economic Development Strategy](#)
  - [Hudson Valley Region Distress Criteria Statistical Report](#)
  - [Annual County Profiles](#)
- [Water Quality and Watershed Planning & Management and educational materials](#)
- [Green infrastructure practices](#)

#### SOLAR SITE HOSTS

##### WARWICK VALLEY CENTRAL SCHOOL DISTRICT

- **Warwick Valley Central School District Solar Case Study:** *Included in Workshop packet.*
- **Balance of Public Interest:** This document outlines the School District's public benefit analysis, including the SEQR process, archeological study, glare study, visual impact assessment conducted, and compliance with local zoning. *Included in Workshop packet.*
- **[Local Law Filing—Town of Warwick Proposed Local Law No. 9 of 2018, A Local Law to Amend the Zoning Law](#):** Covers amendments to Zoning Law for small, medium, and large-scale solar energy systems, covering solar carports and limitations on acreage and coverage.
- **[Town of Warwick Large-scale Solar Energy Installations Zoning](#):** See section G.
- **[Solar Power Project](#):** Warwick Valley's project description.

##### TOWN OF WAWAYANDA

- **Wawayanda Town Hall Solar Case Study:** *Included in Workshop packet.*
- **[Local Law to Amend Chapter 195-42.1 E, Large Scale Solar Energy Systems and Equipment within the Town of Wawayanda](#):** The amendment includes consent, visual, noise, and decommissioning instructions as part of the special use permit application requirement.
- **[Wawayanda makes changes to solar law](#), *Times Herald Record.***

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## TOWN OF WALLKILL

- [Town of Wallkill Landfill Solar Case Study](#): *Included in Workshop packet.*
- [Town of Wallkill Zoning Code, Article XX: Solar Energy Systems and Equipment](#)
- [RFP for Installation of a Solar Photovoltaic Energy System at the Site of the Town of Wallkill](#)
- [Wallkill solar farm nears completion](#), *Mid-Hudson News*

## LARGE-SCALE SOLAR RESOURCES

[New York Solar Guidebook for Local Governments](#), NY-Sun: The updated 2018 *Guidebook* includes new chapters on Payment-in-Lieu-of-Taxes, Understanding Solar Installations in Agricultural Districts, Landowner Considerations for Solar Land Leases, Decommissioning Solar Panel Systems, Model Solar Energy Local Law, and Municipal Solar Procurement Toolkit for underutilized lands. It also offers guidance to code enforcement officers for the review and evaluation of solar electric systems for grid-tied residential solar PV installations of 25kW or less. *Included in Workshop packet.*

[Megawatts of solar power installed by county in New York](#), NY-Sun: This hyperlink provides the most up-to-date map of MWs of solar power installed by county. As of December 2017, the region with the most MWs installed was the Long Island with 237.11MW. The mid-Hudson followed with 208.40MW; Orange County led with the most MWs installed, followed by Westchester County.

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## SOLAR SITING

- [Best Practices for Siting Solar PV on Municipal Solid Waste Landfills](#), US Environmental Protection Agency: This 2013 *Guide* addresses common technical challenges for siting PV on MSW landfills for local governments, landfill owners, and solar developers.
- [RE-Powering's Electronic Decision Tree](#), US Environmental Protection Agency: Use this tool to determine if sites in your community are suitability for solar PV. The tool addresses potentially contaminated sites (superfund, brownfield, RCRA, mine site), landfills, underutilized sites (abandoned parcels, parking lots, buffer zones), and rooftop (commercial/industrial roofs). *Information sheet is included in Workshop Packet.*
- [Solar Photovoltaic Screening Study of Properly Closed Municipal Solid Waste Landfills](#), US Environmental Protection Agency: This screening study is conducted free of charge by EPA staff and provides preliminary information to assist municipalities in determining the potential for solar PV electricity generation at a municipal landfill. *Included in Workshop packet.*
- [Solar projects surge: Landowners reaching for the sun, savings](#), *Poughkeepsie Journal*: This May 2018 article presents the farmer's perspective on solar installations on farmland as well as issues, such as taxation implications, that farmers must consider.
- [Overview of Opportunities for Co-Location of Solar Energy Technologies and Vegetation](#), National Renewable Energy Laboratory: This 2013 report discusses the benefits of locating solar facilities with agricultural operations and native vegetation growth. It is a good companion to Scenic Hudson's renewable siting guide.
- [Clean Energy, Green Communities: A Guide to Siting Renewable Energy in the Hudson Valley](#), Scenic Hudson: This 2018 *Guide* provides guidance for solar installations, with a focus on prioritizing development on previously disturbed areas and existing buildings as well as protecting

agricultural lands, scenic views, historic and cultural resources, and ecological resources. *Included in Workshop packet.*

- [Guidelines for Agricultural Mitigation for Solar Energy Projects](#), New York State Department of Agriculture and Markets: These brief 2018 guidelines provide recommendations regarding construction, restoration of disturbed lands, monitoring and remediation, and decommissioning.
- [Farmer's Guide to Going Solar](#), US Department of Energy, Office of Energy Efficiency & Renewable Energy: This webpage answers FAQ on various topics, including contamination of soil, grazing by wild and domesticated animals, and conversion back to agricultural use.

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## ZONING FOR SOLAR ENERGY

- [Zoning for Solar Energy](#), Dutchess County Planning Federation: A good primer for zoning considerations.
- [Solar Farms](#), Orange County Department of Planning: Provides a list of zoning considerations for solar installations.
- [Zoning for Solar Energy: Resource Guide](#), Pace University Land Use Law Center: This publication is designed to help New York State localities amend zoning and other land use regulations to permit the development of solar energy systems in their jurisdictions. This *Guide* focuses primarily on solar electric or photovoltaic (PV) systems.
- Additional sample solar zoning listed in Solar Site Hosts and Solar Moratorium sections.

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## SOLAR MORATORIUM

- [Solar farm moratorium issued](#), *Times Herald-Record*: This 2015 article discusses why municipalities may pursue a solar moratorium.
- [A Local Law Creating a Moratorium of Opening, Siting, Maintenance, and Operation of Commercial Solar Uses in the Town of Mount Hope](#): *Included in Workshop packet.*
- [Zoning Chapter 193: Solar Energy](#), Town of Mount Hope

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## VALUE OF DISTRIBUTED ENERGY RESOURCES

- [VDER Resources](#), NY-Sun: This webpage provides information on this compensation mechanism that replaced net energy metering.
- [Solar Value Stack Calculator](#), NY-Sun: This calculator is designed to help contractors better estimate compensation for specific solar projects.

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## TOOLS

- [Hosting Capacity Maps and Useful Links](#), New York State Department of Public Service: Access hosting capacity maps for NYS utilities.
- [NY Solar Map](#), Sustainable CUNY: The NY Solar Map contains a calculator that allows users to estimate the environmental and financial benefits of a solar energy system. It also shows solar radiation, which can inform a locality's solar energy producing capacity.

- [RE-Powering Mapper](#), US Environmental Protection Agency: This is an online interactive web application that allows users to visualize the EPA’s information about renewable energy potential on contaminated lands, landfills, and mine sites. The Mapper includes over 80,000 sites for their renewable energy potential.
- [PVWatts Calculator](#), National Renewable Energy Laboratory: This application is a basic solar modeling tool that calculates hourly or monthly PV energy production based on minimal inputs, easily developing estimates of the performance of potential PV installations.
- **System Advisor Model, National Renewable Energy Laboratory:** This model is available to those interested in a very deep dive. It is a full system PV analysis tool that combines detailed performance modeling with detailed financing modeling, cost data, and detailed incentive abilities. The model is downloadable from the first hyperlink. The second hyperlink explains the model and projections it provides.
  - [System Advisor Model \(SAM\)](#)
  - [System Advisor Model \(SAM\) General Description](#)

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## ARTICLE 10

- [Article 10](#), NYSERDA: Provides a brief overview of New York State’s Article 10 law.
- [Siting Board – FAQ](#), Board on Electric Generation Siting and the Environment: An in-depth FAQ on Article 10.

## FINANCING YOUR MUNICIPAL SOLAR PROJECT

[Guide to Implementing Solar PV for Local Governments](#), US Department of Energy, SunShot: This 2015 *Guide* provides an in-depth overview of the options for financing solar PV projects, including financial incentives, financing with project ownership (municipal lease or tax-exempt lease-purchase, tax-exempt bonds, revolving loan funds), and financing with third-party ownership (operating lease, power purchase agreement, sale/leaseback, partnership flip, hybrid-municipal bond PPA).

**Specifications for Proposal for a Solar PV Project, Town of Bethel, Sullivan County:** This sample RFP is available electronically upon request.

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## 3<sup>RD</sup> PARTY SOLAR LEASES

- [Solar Farm Leases Q&A](#), Cornell Cooperative Extension Sullivan County and Sullivan Alliance for Sustainable Development: A quick primer on large-scale solar and leases.
- [Guide to Land Leases for Solar](#), Solar Energy Industries Association: This 2016 *Guide* is designed to help land owners understand the opportunities and implications of leasing their property for solar installations. At only 6 pages, it provides a good checklist of questions to ask when considering leasing.
- [Request for Proposals: Leasing Municipal Land for Solar Development](#), NY-Sun: A template RFP.
- [Solar Lease Agreement](#), NY-Sun: This model lease agreement is tailored for solar development on capped landfills.
- [Sample Ground Lease Agreement](#), Cypress Creek Renewables: A 2015 lease for a project located in the Town of Bethel, Sullivan County.

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## POWER PURCHASE AGREEMENTS

The PPA financing model is a “third-party” ownership model, which requires a separate, taxable entity (“system owner”) to procure, install, and operate the solar PV system on a consumer’s premises (e.g., the government agency). The government agency enters into a long-term contract to purchase 100% of the electricity generated by the system from the system owner.

- [Solar PPAs: A Toolkit for Local Governments](#), Interstate Renewable Energy Council: This webpage offers comprehensive information on PPAs, with the goal of helping localities overcome the common challenges and costs associated with PPAs. The Toolkit provides a full suite of legal resources and related documents, including the following templates: site license, site easement, site lease, and sample PPA.
- [Power Purchase Agreement Checklist for State and Local Governments](#), National Renewable Energy Laboratory: Provides a good overview of considerations associated with the PPA financing model.
- [Climate Smart Communities Program](#), New York State Department of Environmental Conservation: Explore localities across the State that have Shifted to Clean, Renewable Energy through PPAs. Under By Certified Action, select 4, PE4 Action: Solar Energy Installation and PE4: Power Purchase Agreement for Renewables. Sample PPAs are available.

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## MUNICIPAL BOND – POWER PURCHASE AGREEMENT HYBRID MODEL

The municipal bond – PPA model, also known as the Morris Model, combines the tax monetization benefits of third-party ownership with low-cost capital in the form of public debt. The first hyperlink provides an excellent, high-level description of this financing model as well as circumstances under in which it may not be applicable. The second hyperlink provides an in-depth analysis.

- [Renewable Energy Project Finance: Municipal Bond - PPA Model](#), National Renewable Energy Laboratory
- [Financing Solar PV at Government Sites with PPAs and Public Debt](#)

## LOCAL NEWS COVERAGE

- [Region’s hot new crop: large-scale solar farms](#), *Times-Herald Record*: This April 2016 article touches on the lack of solar zoning and how municipalities and counties were approaching this issue.
- [Community solar projects booming in mid-Hudson](#), *Times-Herald Record*: This March 2018 article discusses community solar.
- [Wave of large solar power projects puts spotlight on local laws](#), *Times-Herald Record*: This April 2018 article touches on community resistance to solar projects.
- [Small victory for Minisink residents near proposed solar farm](#), *Times-Herald Record*: This May 2018 article presents siting issues raised by community residents, including floodplains and wetlands concerns, as well as the solutions identified.

## ADDITIONAL MATERIALS

- The below in-depth documents on PV system installation and O&M were developed through an industry-organizing process convened by the National Renewable Energy Laboratory. These documents are designed to provide a reasonable protocol supported by the industry stakeholder process in order to improve the energy and cash flow production capability of PV generation assets in the field.
  - [Best Practices in PV System Installation](#)
  - [Best Practices in PV System Operations and Maintenance](#)
- **[Sterling Municipal Light Department, Clean Energy State Alliance](#)**: This case study reports on a small municipal's use of a battery storage system to compliment an existing solar electric system for cost savings and resiliency.
- **[Solar for all, NY-Sun](#)**: This NY-Sun factsheet explains a community solar program that benefits households with incomes below 60% of the State median income.
- **[Unlocking Solar for Low- and Moderate-Income Residents](#)**, Clean Energy State Alliance: This document provides a matrix of financing options by resident, provider, and housing type, examining 13 financing options that could be used to serve LMI residents.