



# *Powering Sullivan*

**Smart Energy Choices for Your Home, Business and Town**

*From the Sullivan County Office of Sustainable Energy (OSE)*

**2019 Edition**

## Getting Energy Wise in Sullivan County



**Climate Smart  
Communities**  
Certified

Sullivan County is proud to be the sixth county and the fifteenth municipality in NYS to achieve Bronze certification as a **Climate Smart Community** by the NYS Department of Environmental Conservation. Sullivan County has also been designated a **Clean Energy Community** by the New York State Energy Research and Development Authority (NYSERDA). These awards recognize the County's many significant actions to reduce waste, improve energy efficiency, reduce GHG emissions, and transition to renewable energy, all of which reduce operational expenses for the County.

Seven Sullivan County towns are also registered Climate Smart Communities: Bethel, Cocheton, Delaware, Fallsburg, Highland, Lumberland, and Tusten. Of these, Bethel and Tusten have achieved Bronze Certification. Bethel, Tusten and Highland are designated Clean Energy Communities.

We hope this Resource Book provides useful information and contacts to help you make your home or place of business and your town or village more energy efficient and economical to run; healthier, safer and more comfortable; and more resilient to the potential impacts of climate change in our region.

## About the Sullivan County Office of Sustainable Energy (OSE)

The OSE develops cost effective projects, policies and practices that make County operations and our surrounding community more sustainable, resilient, healthy, energy efficient and environmentally responsible. The OSE provides research, analysis, strategies, informational outreach and project support on a range of issues relating to sustainability, and works in close coordination with numerous County departments, local and state agencies and community organizations to maximize the resources available to the County and its residents.

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***About web links in this publication:** We have tried to ensure that the web addresses in this publication are current and accurate, but these resources are constantly changing. Please don't hesitate to call us if you need help with one of these contacts.*

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## Electric Vehicles

### *Join the EV revolution*

The number of battery electric and plug-in hybrid electric vehicles on the road in New York has grown exponentially since 2011, with more than 38,000 registered in the state. Electric vehicles provide better fuel economy, a quiet ride, and significant environmental benefits associated with reduced use of fossil fuels, especially when the electricity used to fuel the vehicle comes from renewable sources. The US Department of Energy uses the concept of the eGallon to estimate how much it costs to drive an electric vehicle the same distance you could go on a gallon of unleaded gasoline in a similar car. The cost varies depending on the price of gasoline and the price of electricity in a given location; the DOE estimates that it costs roughly 3 times as much to fuel a car with gasoline as to fuel it with electricity.

Sullivan County supports the transition to electric vehicles and the development of a network of EV charging stations, which will help County residents make the transition and will encourage EV drivers to consider Sullivan County as a location to live, work, shop and visit.

The New York State Energy Research and Development Authority (NYSERDA) offers a wide range of information and support to those interested in EV technology. To reach NYSERDA by phone, call 1-866-NYSERDA, or (518) 862-1090.

**For Drivers:** NYSERDA's EV web pages have resources for choosing the right electric vehicle to suit your needs, and information on applying for the NYS rebate on the purchase of zero-emissions and electric vehicles. Through the **Drive Clean Rebate Program**, New York State offers \$2,000 rebates on the purchase of zero-emissions and plug-in hybrid vehicles from participating NYS car dealers.

<https://www.nyserda.ny.gov/All-Programs/Programs/ChargeNY/Drive-Electric>

<https://www.nyserda.ny.gov/All-Programs/Programs/Drive-Clean-Rebate> or call 866-595-7917

**For Businesses:** Fleet managers can also take advantage of the Drive Clean Rebate for electric cars by purchasing or leasing an electric car through a participating New York State car dealer. <https://www.nyserda.ny.gov/All-Programs/Programs/Drive-Clean-Rebate>

**Where are the EVs in New York State?** To research how many electric vehicles are registered in individual counties in NYS, visit the ChargeNY Electric Vehicle Registration Map :

<https://www.nyserda.ny.gov/All-Programs/Programs/ChargeNY/Support-Electric/Map-of-EV-Registrations>

# Electric Vehicles for Municipal Fleets

*Cost-saving incentives for towns and villages*

**NYSERDA** provides guidance for Towns and Villages looking to update their fleets with electric vehicles:

<https://www.nyserdera.ny.gov/Researchers-and-Policymakers/Electric-Vehicles/Info/Planners-and-Municipalities>

## Municipal ZEV Program

The NYS Department of Environmental Conservation (DEC) administers the Municipal ZEV (Zero Emissions Vehicle) program, which provides rebates to cities, towns, villages, and counties to purchase or lease (for at least 36 months) new clean vehicles for fleet use. Plug-in hybrid electric, all-electric, and hydrogen fuel cell vehicles are eligible. Rebates of \$2,500 or \$5,000 are available, depending on the electric range of the vehicle. The ZEV rebate may also be combined with the New York State aggregated purchase opportunity.

<https://www.dec.ny.gov/energy/109181.html> or call **518-402-8448** **Clean Vehicle (CV) Rebate Program (PDF, 496 KB)**



A hybrid Ford Fusion Energi is now part of the County fleet. *Photos: Dan Hust*



The hybrid's advanced sensors help drivers achieve better fuel economy.

## Electric Vehicle Supply Equipment (EVSE)

### *Creating a network of electric vehicle charging stations*

Stores, shopping districts, office buildings, municipal facilities, medical and educational campuses, parking facilities and multifamily housing are all great locations for electric vehicle charging equipment. Hosting EVSE can attract customers and enhance destination status for Main Street districts. **NYSERDA** provides technical information, location guidance, incentives and financing options for businesses.

<https://www.nysерda.ny.gov/All-Programs/Programs/ChargeNY/Charge-Electric/Charging-Station-Programs>

**Charge Ready NY** offers public and private organizations that install Level 2 EV charging stations at public parking facilities, workplaces, and multifamily apartment buildings rebates of \$4,000 per charging port they install, a significant savings of 30% to 80%, depending on station and installation costs.

<https://www.nysерda.ny.gov/All-Programs/Programs/ChargeNY/Charge-Electric/Charging-Station-Programs/Charge-Ready-NY>

**About Hosting EVSE at your Business** NYSERDA has information about the various types and levels of EVSE and design guidelines for siting the equipment on your property, as well as case studies featuring EVSE at retail, hospitality, tourism and other locations:

<https://www.nysерda.ny.gov/Researchers-and-Policymakers/Electric-Vehicles/Info/Charging-Station-Hosts>

**Finding Publicly Accessible EVSE** To locate publicly accessible electric vehicle charging equipment in New York State and across the country, consult the following resources:

### **New York State Electric Vehicle Locator Map:**

<https://www.nysерda.ny.gov/All-Programs/Programs/Drive-Clean-Rebate/Charging-Options/Electric-Vehicle-Station-Locator#/find/nearest>

### **Plug-In America “Find an EV Charging Station”**

<https://pluginamerica.org/get-equipped/find-an-ev-charging-station/>

## EVSE Resources for Towns and Villages

### *Incentives and siting expertise for local governments*

Towns and villages can support the expansion of EVSE by installing publicly accessible charging equipment on municipally owned land, and by adopting zoning and permitting regulations that streamline the approval process for businesses and private property owners. Through the **Charge NY program**, NYSERDA provides informational resources, including model zoning and permitting language and guidelines for best practices for equipment siting and installation.

### Charge NY

ChargeNY is a NYS program administered by NYSERDA aimed at increasing the number of electric vehicles in use in NYS, helping towns and villages streamline their zoning and permitting regulations for EVSE, and educating local officials and policy makers.

<https://www.nyserdera.ny.gov/All-Programs/Programs/ChargeNY/Charge-Electric/Charging-Station-Programs>

In addition, the **New York Power Authority (NYPA)** helps local governments implement and finance electric vehicle charging stations for public use. <https://www.nypa.gov/innovation/programs/chargeny>

### For Towns and Villages looking for well written EVSE zoning and permitting resources:

NYSERDA provides model language for local permitting of Level 1 charging equipment for residential (private) use as well as model zoning for the location and permitting of publicly-accessible charging equipment.

<https://www.nyserdera.ny.gov/Researchers-and-Policymakers/Electric-Vehicles/Info/Planners-and-Municipalities>

*EVSE at the Town of Thompson Town Hall.  
Photo: Dan Hust*



## Community Energy Advisors—Cornell Cooperative Extension Sullivan County

*Helping homeowners, small businesses, not-for-profit organizations and multi-family building owners cut energy waste, save money, and live or work more comfortably*

Cornell Cooperative Extension of Sullivan County has contracted with NYSEDA through Cornell Cooperative Extension of Dutchess County to help area residents and businesses reduce their energy consumption and energy costs and make informed energy decisions. Cornell's Community Energy Advisors offer free, one-on-one appointments to discuss your energy options. The program is open to all residents, especially households with limited resources facing higher energy costs, homeowners, small businesses, and non-profit organizations.

Find out how you can:

- Reduce your heating and electric bills
- Take charge of your energy budget with a home or business energy assessment
- Access financing and programs that offer free or reduced-cost energy efficiency upgrades
- Start generating clean, renewable energy at your home or place of business

Cornell's Community Energy Advisors can guide you through the process of implementing a clean energy project and connect you with NYSEDA approved energy contractors. They can refer you to a range of programs, including: **Home Performance with Energy Star, Assisted Home Performance with Energy Star, Empower NY, NY-SUN, Solar for All, Renewable Heat NY, Green Jobs Green NY Energy Study Program, Energy Study Aggregation Program**, and the **HeatSmart Campaign in Ulster-Sullivan**.

Visit <http://sullivancce.org/energy/community-energy-advisors> or call **(845) 292-6180, ext. 127** to set up an appointment with Cornell's Community Energy Advisors.

For additional information, visit <https://midhudsonenergychoices.org/>

**Cornell Cooperative Extension** | Sullivan County

Representing CCE Dutchess County, an Independent Contractor to NYSEDA



**NYSEDA**  
Supported

## What is an Energy Assessment?

*A diagnostic “checkup” identifies opportunities for improvement*

Most energy improvements begin with an examination of current energy systems and building conditions. The resulting energy assessment (sometimes called an energy audit) serves as a “checkup” for homes, commercial buildings and municipal facilities, conducted by a qualified contractor who examines existing conditions and identifies areas where improvements can be made. To qualify for access to NYS financing and incentives to help you improve the energy efficiency of your property, your energy assessment must be conducted by a NYSERDA-approved contractor who is accredited by the Building Performance Institute (BPI).



*The blower door apparatus*

The contractor makes a visual inspection of the living or working space, attic and basement (or crawl spaces), using special diagnostic equipment. This equipment includes a blower door apparatus and a thermographic camera, which help the contractor identify where air leaks are located and how much air is leaking from the building. The contractor also performs health and safety tests to check that major combustion appliances (furnace, boiler, hot water tank and stove) are operating safely.

The assessment will identify specific cost-effective measures that will save you money on your energy bills. Your contractor analyzes the assessment data and provides a written report with valuable information about the energy efficiency of the building and recommendations for measures that may include weather stripping; caulking; insulation; repair or replacement of heating or cooling systems; thermostat upgrades; water

heater repair and replacement; repair or replacement of storm windows, permanent windows and exterior doors; repair or replacement of major household appliances; installation of solar thermal heating or hot water systems; replacement of inefficient light bulbs and lighting fixtures; and opportunities for solar PV systems to supply electricity and other renewable energy options.



*Thermographic cameras reveal air leaks that can be remedied with insulation.*

*Photos: John Back*

## **Make Your Home Healthier and More Efficient**

*Save money while improving your quality of life*

Sullivan County residents have many options to help them save money on energy bills, make their homes safer, healthier and more comfortable. Whatever your income level, there are programs and agencies that can help.

### **Community Energy Advisors - Cornell Cooperative Extension Sullivan County**

Cornell Cooperative Extension Sullivan County has contracted with NYSERDA through the Dutchess County Cornell Cooperative Extension to help area residents and businesses reduce their energy consumption and energy costs. Cornell's Community Energy Advisors offer free, one-on-one appointments to discuss your energy options. The program is open to all residents, homeowners, small businesses, and non-profit organizations. Cornell's Community Energy Advisors can guide you through the process of implementing a clean energy project and connect you with NYSERDA-approved energy contractors.

<http://sullivancce.org/energy/community-energy-advisors> or call (845) 292-6180, ext. 127

### **HEATSMART Ulster-Sullivan**

HeatSmart Ulster-Sullivan helps homeowners and small businesses install more efficient heating and cooling units, such as ground-source and air-source heat pumps. Energy efficiency improvements will lower energy bills, reduce emissions of harmful greenhouse gases while making homes and businesses more comfortable. HeatSmart energy consultants walk owners through the process of selecting and installing clean heating and cooling units. HeatSmart Ulster-Sullivan is a collaboration between Catskill Mountainkeeper and Sustainable Hudson Valley. The HeatSmart program is supported with funding from the New York State Energy Research and Development Authority's (NYSERDA) Clean Heating and Cooling Communities program.

<https://www.renewableny.org/heatsmart> or call Sam Wright at (845) 439-1230

## **NYS Housing and Community Renewal (NYSHCR)**

NYSHCR provides weatherization resources to **help low and moderate income residents improve heating efficiency** through insulation upgrades and furnace repair or replacement, plus other measures to make homes safer, more comfortable and more economical.

<http://www.nyshcr.org/Programs/WeatherizationAssistance/> or call 518-474-5700 e-mail at [weatherization@nyshcr.org](mailto:weatherization@nyshcr.org)

**HEAP (Home Energy Assistance Program) helps low-income people pay winter heating costs (November through April).**

**HEAP main contact:** Sullivan County Department of Social Services, **(845) 807-0142** Monday through Friday

**After Hours Emergency contact:** Sullivan County Sheriff's Department, **(845) 794-7100** Monday through Friday

NYS Office of Temporary and Disability Assistance Hotline at 1-800-342-3009. <http://otda.ny.gov/programs/heap/>

## **NYSERDA (NY State Energy Research and Development Authority)**

Start your energy project by getting a free or low cost home energy assessment through NYSERDA. Your assessment report will include recommended measures, from low- or no-cost do-it-yourself options to bigger projects that can help you save substantially on your energy bills. NYSERDA offers access to low-interest financing for eligible energy improvements including solar installations. Homeowners can also learn about high-efficiency/low emission wood heating systems, and incentives for wind energy systems.

**General Information**      **1-866-NYSERDA**      <https://www.nyserda.ny.gov/Residents-and-Homeowners>

**NYSERDA programs for home energy assessments and financing assistance for energy improvements for low/moderate income**

<https://www.nyserda.ny.gov/All-Programs/Programs/Assisted-Home-Performance-with-ENERGY-STAR>

## Energy Planning for Your Business

*Control overhead expenses, improve your bottom line and make your facilities safer and more comfortable for employees and customers*

### Community Energy Advisors - Cornell Cooperative Extension Sullivan County

Cornell Cooperative Extension Sullivan County has contracted with NYSEERDA through Cornell Cooperative Extension of Dutchess County to help area residents and businesses reduce their energy consumption and energy costs and make informed energy decisions.

<http://sullivancce.org/energy/community-energy-advisors> or call (845) 292-6180, ext. 127

### NYSEERDA (NY State Energy Research and Development Authority)

Energy saving tips for businesses and industry, and a range of resources to help you make smart energy choices.

<https://www.nyserda.ny.gov/Business-and-Industry> or call 1-866-NYSEERDA

**FlexTech Energy Assessments:** A NYSEERDA FlexTech contractor can identify cost-effective energy improvements — including heating and cooling, lighting, renewable energy, energy storage, and energy efficient equipment. Commercial and industrial facilities that pay into the electric System Benefits Charge (SBC) can participate. Eligible buildings include office buildings, retail, health care facilities, not-for-profit and private institutions, public and private K-12 schools, and data centers. For most studies, NYSEERDA contributes 50% of the eligible costs.

<https://www.nyserda.ny.gov/All-Programs/Programs/FlexTech-Program>

### US Department of Agriculture (USDA) Rural Energy for America

USDA offers guaranteed loans and small grants for rural small businesses to finance energy efficiency improvements. Call (315) 736-3316 Ext. 129 or visit <https://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency>

### Use Portfolio Manager to Monitor Energy Costs and Savings

Free energy accounting software that allows you to track energy usage and expenses and identify future cost-saving improvements.

<https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>

## Energy Planning for Farms and On-Farm Producers

*Special programs help farmers save money on energy bills*

### Community Energy Advisors - Cornell Cooperative Extension Sullivan County

Cornell Cooperative Extension Sullivan County has contracted with NYSERDA through Cornell Cooperative Extension of Dutchess County to help area residents and businesses reduce their energy consumption and energy costs and make informed energy decisions.

<http://sullivancce.org/energy/community-energy-advisors> or call (845) 292-6180, ext. 127

### NYSERDA 1-866-NYSERDA

Farm operators can get a free energy audit through NYSERDA and receive a report with estimated savings or energy generation for each recommended improvement. Technical assistance is available for dairies, orchards, greenhouses, vegetables, vineyards, grain dryers, and poultry/egg farms, among others. Farmers should use the Agriculture Energy Audit Application (Attachment A-2) to apply. Visit [www.nyserderda.ny.gov/Agriculture](http://www.nyserderda.ny.gov/Agriculture) or call 1-800-732-1399 for information about no-cost farm energy audits.

<https://www.nyserderda.ny.gov/Business-and-Industry/Agriculture>

<https://www.nyserderda.ny.gov/All-Programs/Programs/Agriculture-Energy-Audit>

**NYSERDA Small Wind Program:** Funds are available to support the installation of grid-tied small wind turbines to power farm operations. The maximum equipment size is 2 MW per site per customer. NYSERDA's incentive cannot exceed 50% of the total installed cost of the system. <https://www.nyserderda.ny.gov/All-Programs/Programs/Small-Wind-Program>

### US Department of Agriculture (USDA) Programs USDA NY (315) 736-3316 Ext. 129

**Energy efficiency, Rural Energy for America:** These programs offer guaranteed loans and small grants for rural small businesses and agricultural producers, for renewable energy systems and energy efficiency improvements. <https://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency>

## Energy Planning Resources for Towns and Villages

*Lowering operational costs and building community resiliency*

### The Climate Smart Communities (CSC) Program

To date, 249 towns, villages and counties in New York have joined the **Climate Smart Communities** Program, which provides resources to help municipalities reduce energy costs, decrease greenhouse gas emissions (GHG), and adapt to the potential impacts of climate change at the local level. Sullivan County achieved Bronze certified-status in 2017, and continues to forge ahead with CSC actions and policies.



Bethel and Tusten received their CSC certifications and CEC designations in summer 2018 *Photo: SC OSE*

The Towns of Bethel and Tusten are also Bronze certified, and Cohecton, Delaware, Highland, Fallsburg and Lumberland have registered with the program. Municipalities that take the Climate Smart Communities Pledge receive extra points towards qualifying for NYS funding for a variety of planning and infrastructure grant opportunities. For example, in 2017 Highland secured \$624,750 through the Climate Smart Communities grant program to relocate their town garage due to flooding issues; in 2018, the Town of Fallsburg secured a \$168,713 grant for flood control, and Sullivan County was awarded \$934,084 for a flood control project in the hamlet of Kohlertown in the Town of Delaware. Grant opportunities are usually announced in May and applications are due at the end of July, with awards announced in December.

To learn more and access the Climate Action Planning Toolkit:

<http://www.dec.ny.gov/energy/76483.html>

518-402-8448

Visit the **CSC Portal** to explore climate smart municipal strategies at <https://climatesmart.ny.gov/>

More on **Sullivan County's CSC achievements**: <http://sullivanny.us/Departments/SustainableEnergy/ClimateSmartCommunitiesProgram>

## **Clean Energy Communities Program (CEC)**

Local governments in New York State can also use the Clean Energy Communities program to implement clean energy actions, save energy costs, create jobs, and improve the environment. The program provides resources and technical assistance, and recognizes and rewards leadership for the adoption of clean energy policies and completion of clean energy projects. To be designated a Clean Energy Community, municipalities must complete four out of ten priority actions. Sullivan County achieved CEC designation in 2017, followed by the Towns of Bethel, Tusten and Highland. The **Hudson Valley Regional Council** is the CEC Coordinator for Sullivan County.

Contact Carla Castillo at **845-564-4075, ext. 210** or e-mail at **[ccastillo@hudsonvalleyrc.org](mailto:ccastillo@hudsonvalleyrc.org)**

**<https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Communities>**

**Portfolio Manager** This free software from the US EPA helps municipalities track and analyze building energy use and quantify GHG reductions and cost savings. **<https://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/use-portfolio-manager>**

**ICLEI-Local Governments for Sustainability** ICLEI is an international network of local governments that provides tools and strategies for reducing GHG emissions and improving sustainability and resiliency. **<http://icleiusa.org/>**

**NYSERDA Energy Efficiency for Local Governments** NYSERDA offers financial and technical assistance and training to help with municipal buildings, fleets, and renewable energy. **<https://www.nyserda.ny.gov/Communities-and-Governments/Local-Governments>**

NYSERDA also provides **NYS Energy Code training for town officials and code enforcement officers**. **<https://www.nyserda.ny.gov/All-Programs/Programs/Energy-Code-Training>**

**Green Purchasing** The National Association of State Purchasing Officials offers a step by step process to help municipal purchasing officials identify key issues and opportunities. **<http://www.naspo.org/green/index.html>**

## Community Distributed Generation

*“Go solar” without installing a single panel on your property*

Community Distributed Generation (CDG) projects expand access to solar energy generation to utility customers who cannot site solar directly on their own property. CDG enables multiple customers to receive net metering credits from a single solar energy installation. Sullivan County boasts four completed CDG projects totaling 7.8 MW of nameplate generation capacity, with another 17 projects in development, which could add another 47.8 MW of nameplate capacity. At present, the NYS Public Service Commission has set a limit of 5MW on each CDG array.

A CDG project involves a **Solar Developer** and **Members**. The **Solar Developer** builds the array and manages the project over its 20-30-year lifetime. **Members** are the off-takers or subscribers who use the electricity. Members can be any utility customer in the same utility jurisdiction as the project. Energy generated by the project is credited to the Members’ utility bills, based upon their documented electricity usage. For now, Members receive 2 electricity bills each month: the utility sends a bill for electric service, noting that the power purchased through the CDG project is credited to the Member’s account. The solar developer sends a separate bill for the actual power purchased and used by the Member.

The **NY-SUN** program provides comprehensive information on solar projects in NYS.

NY-SUN: <https://training.ny-sun.ny.gov/community-distributed-generation-community-solar>

### Solar for All

NYSERDA’s Solar for All offers **income-eligible households** the opportunity to subscribe to community solar at no cost. Program participants receive monthly credits on their electricity bills and there are no upfront costs, fees, or payments to participate.

<https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Solar-for-Your-Home/Community-Solar/Solar-for-All>

E-mail at [solarforall@nyserda.ny.gov](mailto:solarforall@nyserda.ny.gov) or call **1-877-NYSMART**.

**Check out interactive maps of solar development** all over New York State here: <https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Data-and-Trends>

## Community Choice Aggregation

### *Empowering towns and villages to make energy decisions*

Community Choice Aggregation (CCA) is a power procurement model that allows municipalities (cities, towns or villages) to negotiate electricity prices for all of their residents and small businesses. The municipal CCA replaces the utility as the default purchaser on behalf of eligible households and businesses. By “aggregating” or combining the purchasing power of the group, the CCA can secure a lower price for electricity and can choose to purchase electricity from renewable sources such as solar, wind and micro-hydro. The utility remains responsible for delivering the electricity and for billing. CCAs can offer energy efficiency measures to customers and integrate local renewable energy projects like Community Distributed Generation (CDG). The NYS Public Service Commission has established guidelines for the creation of CCAs at the municipal level.

**All residential and small business utility customers are eligible to participate.** Most successful CCA programs are organized on an “opt-out” basis, meaning that utility customers are automatically enrolled unless they elect to “opt out.” Utility customers who have already chosen to purchase their electricity from an ESCO (Energy Service Company) can elect to be enrolled on an “opt-in” basis.

The **municipality’s** first step is to pass a non-binding resolution indicating its intention to explore the possibility of creating a CCA. Then the municipality drafts a local law authorizing the CCA, and holds a public hearing to give town residents the opportunity to comment. After passing the local law, the municipality identifies an organization (for-profit or non-profit) that will serve as the **administrator** of the CCA, and enters into a memorandum of understanding that lays out the roles and responsibilities of each partner. The town can also work with neighboring municipalities to create a CCA, which increases the customer pool and the CCA’s ability to negotiate a favorable price.

The administrator presents an implementation plan and a data protection plan for safeguarding the privacy of customer records, and conducts an extensive educational campaign to inform town residents about the CCA. The administrator initiates a bid process to purchase electricity for the community from an ESCO. Once the bid process is complete and electricity rates are set, customers have the opportunity to opt out of the program if they choose.

**For more information, visit:**

<https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Communities/Clean-Energy-Communities-Program-High-Impact-Action-Toolkits/Community-Choice-Aggregation>

## About Solar Power

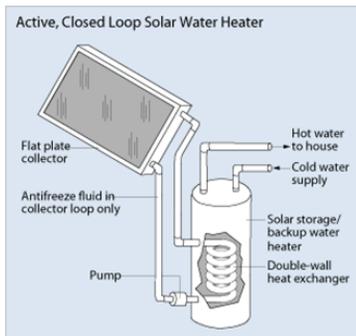
### *Delivering economic and environmental benefits*

**Solar PV (Photovoltaic)** A solar cell, or **photovoltaic cell**, is an electrical device that converts the energy of light from the sun into electricity. Solar cells are the building blocks of photovoltaic modules, otherwise known as solar panels. The components of a solar energy system are:

- **Solar Panels** – Convert the sun’s rays into direct current (DC).
- **Inverter** – Converts DC current into alternating current (AC) to power the building.
- **Electric Panel (Breaker Box)** – Distributes electricity to circuits in the building.
- **Utility Meter** – Keeps track of the amount of electricity produced and sends excess power into the utility grid to offset nighttime electricity use (net metering).
- **Utility grid** – The system of wires and meters that distribute electricity from generating sources to individual buildings.
- **Monitoring system** – Computerized controls that track energy production and proper operation.
- **Balance of System (BOS)** – Racking and mounting equipment, wires, conduit, etc.



*Inverter at the County's 49.92 kW solar array in Liberty Photo: SC OSE*



**Solar thermal systems** use rooftop solar collectors to heat water for household use, for pools and hot tubs, or for hydronic household heating systems. Low energy pumps circulate water through the solar collectors. Indirect circulation systems are recommended in climates that are prone to freezing temperatures. In these cold climate systems, the pumps circulate a non-freezing heat transfer fluid in a closed-loop system to heat the water.

*Illustration: US Department of Energy*



*14.96 kW solar demonstration project at the County's Mobility Management facility in Bethel*

*Photo: SC OSE*



*The County's 2.4 MW solar array in Liberty powers the Adult Care Center, Shared Health Clinic and six other County facilities.*

*Photo: Dan Hust*

**With 242,343 jobs nationwide in 2018, jobs in the solar industry have grown** 6 times faster than the overall economy since 2013, according to The Solar Foundation's 2018 National Solar Jobs Census. New York State has seen consistent growth in solar industry jobs.

**Solar energy systems** do not produce noise, vibration, odors, emissions or contaminated runoff and do not contribute to soil erosion. They can be completely removed with site restoration to the property's prior condition.

**Environmental and health benefits include** elimination of CO<sub>2</sub> and other GHG emissions associated with electricity generation as well as the emissions associated with the extraction (mining) of coal, oil or natural gas that would have fueled that generation. Also, by fostering a cost-effective switch to electric-powered heating systems, solar energy can help improve indoor air quality in the home due to elimination of combustion appliances.

## Other Renewable Energy Options

*Find the technology that's right for you*

**Wind** turbines use the energy in the wind to generate electricity. Wind energy is projected to make up 39% of new electricity generation in 2019, according to the US Energy Information Administration.

The economics of wind power depend upon the type of turbine, the annual average wind speed at the location, and other factors. Sullivan County has areas of significant wind resource. NYS has incentives available for small turbines to power individual homes, farms or businesses, and guidance resources for the development of larger scale wind installations.

**For small-scale wind power:**

**NYSDERDA informational resources:** <https://www.nyserda.ny.gov/Researchers-and-Policymakers/Power-Generation/Wind/Small-Wind>

**For large scale wind power:** NYSDERDA informational resources: <https://www.nyserda.ny.gov/Researchers-and-Policymakers/Power-Generation/Wind/Large-Wind/New-York-Wind-Energy-Guide-Local-Decision-Makers>

**To explore prime locations for large-scale wind in Sullivan County,** see the County's Market Assessment for Wind Energy Report: [http://webapps.co.sullivan.ny.us/docs/dpem/resources/Market\\_Assessment\\_for\\_Wind\\_Energy\\_in\\_Sullivan\\_Co.pdf](http://webapps.co.sullivan.ny.us/docs/dpem/resources/Market_Assessment_for_Wind_Energy_in_Sullivan_Co.pdf)

**Micro-Hydro** energy systems harness the energy of water flow to generate electricity. They are generally sized according to the natural flow of water in a stream to produce between 5kW and 100 kW of electricity, and do so without dams or reservoirs or other permanent diversions of water from the natural system. **The US Department of Energy provides extensive information on micro-hydro systems:**

<https://energy.gov/energysaver/microhydropower-systems>

**Energy Storage Batteries** can store energy for use during a power failure, reduce the demand charge at small commercial facilities, ease strain on the grid, and store excess solar or wind energy so that it can be used when the renewable energy resource is not available – for example, storing solar energy for use overnight. At the utility scale, battery storage can serve to balance the system and support the transition to an all-renewable grid. Energy storage can complement all types of solar, wind and other renewable energy technologies.

**NYSERDA** provides an incentive for the installation of solar with storage projects for small businesses, large commercial and industrial businesses, and community solar projects.

<https://www.nyserderda.ny.gov/All-Programs/Programs/NY-Sun/Solar-for-Your-Business/Solar-Plus-Energy-Storage>

**Geothermal HVAC (Ground Source Heat Pumps)** Geothermal heating and cooling systems use the relative constancy of temperatures 4 to 6 feet below the earth’s surface to heat and cool a building, using an underground loop filled with water, a heat exchanger, and pumps that run on electricity. They are considered fossil fuel-free if the electricity is sourced from renewable generation (wind or solar).

**NYSERDA** offers information and rebates on GSHP installations at single family homes, commercial buildings, and multi-building campuses.

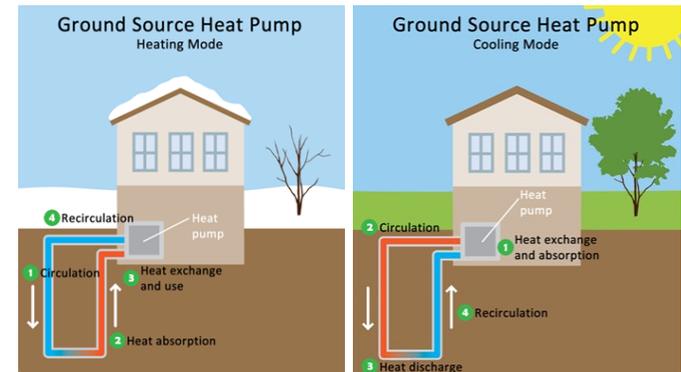
<https://www.nyserderda.ny.gov/Researchers-and-Policymakers/Geothermal-Heat-Pumps>

**NYSERDA rebate program: 518-862-1090**

<https://www.nyserderda.ny.gov/All-Programs/Programs/Ground-Source-Heat-Pump-Rebate>

**US EPA has information on Ground Source Heat Pump technology:**

<https://www.epa.gov/rhc/geothermal-heating-and-cooling-technologies>



*Illustrations: US Environmental Protection Agency (EPA)*

## Glossary

### *Some useful energy terms*

**Blower Door Test:** A test to determine the air infiltration rate of a building. A powerful fan pulls air out of the building, lowering the air pressure inside. The higher outside air pressure then flows in through all unsealed cracks and openings. The apparatus consists of a frame and flexible panel that fit in a doorway, a variable-speed fan, a pressure gauge to measure the pressure differences inside and outside the building, and an airflow manometer and hoses for measuring airflow. The energy assessor may use a smoke pencil or a thermographic camera to detect air leaks.

**Demand Load:** The peak electrical demand an electric utility must be prepared to supply to meet a customer's needs. Commercial buildings may be charged a fee in addition to the cost of the electricity they consume, based upon the capacity or "demand load" the utility must be able to supply at all times to that electric customer.

**Energy Grid:** The network of generators, power lines and other infrastructure components that are coordinated to deliver electricity to customers at various points.

**ESCO (Energy Service Company):** A non-utility business that provides gas or electric commodity or that installs energy efficient and other demand-side management measures in facilities.

**GHG (Greenhouse gases):** GHGs are emissions dispersed in the earth's atmosphere that trap solar heat. The most relevant are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated gases (hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride). Their impact is often expressed in CO<sub>2</sub> equivalents or CO<sub>2</sub>e, a unit of measure that expresses the impact of different GHGs in terms of the amount of CO<sub>2</sub> that would produce the same amount of warming.

The biggest source of CO<sub>2</sub> is the burning of fossil fuels like coal, oil, and gas to make electricity, power cars and trucks, and heat buildings. Methane comes from landfills, coal mines, agriculture, and the production of oil and natural gas. Nitrous Oxide comes from the use of nitrogen fertilizers, from burning fossil fuels, and from disposal of wastes. Fluorinated gases are man-made industrial gases used in refrigeration, air conditioning and as propellants in aerosols.

**kW** (kilowatt): A unit of power equal to 1,000 watts. Ten 100-watt light bulbs demand 1,000 watts or 1kW of electricity supply for the entire time they are illuminated.

**kWh** (Kilowatt hours): Units of power consumption over time. One 100-watt light bulb burning for 10 hours consumes 1,000 watt-hours or 1 kWh of electricity.

**NYISO:** New York State Independent System Operator is a non-profit corporation responsible for operating the state's bulk electricity grid, administering NY's wholesale electricity markets, conducting long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system. The NYISO delineates 11 zones across NYS: Sullivan County falls within Mohawk Valley (Zone E) or Hudson Valley (Zone G).

**Peak Demand Hours:** For a utility, a single half-hour or hourly period which represents the highest daily point of customer consumption of electricity.

**Thermographic Camera:** A device that forms an image using infrared radiation emitted from a heat source. Thermographic cameras help locate air leaks that cause heat loss in winter and cooling loss in summer.

**Utility Load Zone:** A geographical division of the Service Territory assigned to a single utility such as NYSEG, Orange & Rockland or Central Hudson.

**Watt:** One watt is a unit of power equal to that available when one joule of energy is expended in one second. The watt was named after Scottish engineer James Watt (1736–1819).

## The Charges on Your Electric Bill

*You can reduce the costs that are calculated per kilowatt hour of energy use*

Your electricity bill contains a number of charges that may seem a bit mysterious. One reason your bill may seem complex is the fact that in New York State, electricity generation was separated or “decoupled” from electricity delivery in the 1990s. This decision enabled customers to choose an electrical supplier (Electrical Service Company or ESCO) on the basis of pricing or in order to choose to buy electricity generated by renewable technologies. Customers who do not choose an ESCO are automatically enrolled in one of the utility’s affiliated or partner energy suppliers. Regardless of the electricity supplier, your utility company (NYSEG, Orange & Rockland or Central Hudson) is responsible for the delivery of that electricity, maintenance of the lines and systems, metering, billing and providing customer service.

Some charges are fixed, but many are based upon your actual electricity consumption. You can reduce all of the charges that are calculated as a **cost per kilowatt hour (kWh)** of consumption by improving your building’s insulation, installing energy efficient appliances and LED lighting, adopting energy-saving habits, and installing renewable energy systems.

**Basic Service Charge:** Includes metering, billing, line maintenance, and may include a minimum usage cost and is billed whether or not you use the electricity billed.

**Billing Charge:** Cost of issuing bills, customer service and processing of customer payments.

**Supply Charge (Supplier’s Charge):** The cost of the electricity purchased for you by the utility, **calculated as a cost per kWh.**

**Delivery Service Charge:** The cost you pay your utility to deliver electricity to you, **calculated as a cost per kWh.**

**Reliability Support Services Charge:** Provides for recovery of costs the utility incurs for third-party services to ensure that local reliability needs are met. **Calculated as a cost per kWh.**

**Merchant Function Charge (MFC):** Administrative cost for the utility to obtain electricity supply on the customer’s behalf. May be included in the Supply Charge or the Delivery Charge. **Calculated as a cost per kWh.**

**Transition Charge (Transition Adjustment):** Charge or credit representing the difference between the open market cost of energy supply compared to the cost of the utility’s existing long-term electricity supply contracts. **Calculated as a cost per kWh.**

**Revenue Decoupling Mechanism:** Charge or credit reflecting the difference between the utility’s forecast and actual delivery service revenues. Minimizes the financial impact of reduced energy consumption as energy efficiency programs and renewable energy technologies are deployed. **Calculated as a cost per kWh .**

**Systems Benefit Charge/Renewable Portfolio Standard:** Charges that recover the costs of energy efficiency programs, customer rebates for the purchase of high-efficiency appliances, energy assistance for low-income families, energy research and development and renewable energy incentives. **Calculated as a cost per kWh.**

**Commercial and industrial building** accounts may also include a **Demand Charge**, which is the utility’s cost to meet the maximum delivery requirement of a customer – the highest average kW demand measured in a 15-minute interval during the billing period. There are a number of ways to reduce your demand charge:

- Install energy efficient lighting, appliances and equipment.
- Phase-in or stagger your equipment start-up at 15-minute intervals.
- Schedule some of your energy-intensive operations for off-peak hours.
- Use battery backup power at start-up.
- Use on-site renewable energy with battery back-up at start-up.
- Use smart meters and smart controls to cycle off during utility’s peak demand times.

**Your local utility has energy efficiency programs and incentives for residential and commercial customers.**

**NYSEG** 1-800-572-1111 <http://nyseg.com/Energyefficiencyprograms/default.html>

**Orange & Rockland** 1-877-434-4100 <https://www.oru.com/en/save-money/rebates-incentives-credits>

**Central Hudson** 1-845-452-2700 <https://www.cenhud.com/energyefficiency>

## 10 Cost Saving Tips to Reduce Your Energy Use

*We can all use energy and materials more wisely*

- 1. Weatherproof your home.** Locate air leaks around windows and doors, electrical and plumbing outlets, fireplaces and chimneys, and between the foundation and frame of your house. Seal these air leaks with appropriate materials such as weather stripping, foam electrical outlet insulators and outlet plugs, caulk, window putty and door sweeps.
- 2. Get a home energy assessment.** A NYSERDA home energy assessment will identify air sealing problems that are not “do-it-yourself,” test all of your combustion appliances for safety, and provide a plan for needed improvements including access to affordable financing.
- 3. Install low-flow faucets and shower heads.** Maintain comfortable water pressure with less water use.
- 4. Get a checkup for your boiler or furnace.** Replace or clean your air filters regularly and get a professional tune-up to make sure your heating appliances are running properly. Insulate warm air heating ducts to maximize the effectiveness of your heating system.
- 5. Insulate your hot water heating tank.** Reduce hot water energy use by 10-15% by wrapping your hot water tank in an insulation blanket designed for that purpose, and insulating the first 6 feet of pipe. Be careful not to cover the thermostat or the burner compartment of a natural gas or propane heater.
- 6. Upgrade to a tankless hot water heater.** Conventional hot water tanks waste energy by keeping water hot 24/7. Tankless hot water systems heat water “on demand” and can result in energy savings of 8% to as much as 50% depending on your fuel type and the number of people in the household.
- 7. Upgrade to ENERGY STAR appliances.** When it’s time to replace an appliance, choose a new model with an ENERGY STAR rating, for energy performance, water consumption, and cost savings. There are federal and state rebates for ENERGY STAR qualifying purchases.
- 8. Wash clothes in cold water and hang them out to dry.** Save hundreds of dollars each year by washing your clothes in cold water – it’s also easier on clothing fibers.
- 9. Reduce your mowing.** Large green lawns are an American tradition, but they use a lot of energy in mowing, watering and fertilizing. Consider native plants and ground covers to reduce the areas you mow.

**10. Switch to LEDs.** LED lighting ranges from bright white to warm, with lumen equivalents for every household and commercial setting. LEDs use about 75% less electricity than comparable incandescent lights and last 25 times longer. LED holiday lights use 95% less electricity than conventional lights, are more durable and emit no heat. The US Department of Energy estimates that by 2027, widespread use of LEDs in the US could save about 348 terawatt hours (compared to no LED use) of electricity – the equivalent annual electrical output of 44 large electric power plants (1,000 megawatts each), for a total savings of more than \$30 billion at today's electricity prices.

Check out the US DOE Energy Saver pages at <https://energy.gov/energysaver/energy-saver> for more cost-saving tips.

### 3 Ways to Reduce Waste

- 1. Think about the life cycle of the things you buy.** Consider the materials and carbon footprint of the item's manufacture, its durability and how you will use it, how you will dispose of it and whether it can be recycled or repurposed into a new product.
- 2. Avoid disposables whenever possible.** Buy a reusable canteen or water bottle and eliminate purchases of single-serve water. Avoid Styrofoam food containers and other wasteful single-use items and excessive packaging.
- 3. Compost your food and yard waste.** Composting returns valuable organic material back into the soil to nurture the next generation of plants. Composting saves money by replacing chemical fertilizers and reducing the amount of waste your household sends to the landfill.

### Be an Advocate in Your Community

Encourage your town or village to join the Climate Smart Communities program. Volunteer to serve on an energy committee to help your town or village identify energy cost savings, develop local policies that reduce waste and support renewable energy development, and provide information to your fellow residents.

*Front and back cover photos: Dan Hust*



