Clean Energy Upgrades

A High-Impact Action for the Clean Energy Communities Program

Communities and Local Government Team at NYSERDA

Clean Energy Communities Program

Provides **rewards and recognition** to city, town, village, and county governments that demonstrate clean energy leadership

STEP 1: Earn the **Clean Energy Communities** designation by completing **4 out of 10 high-impact actions**

STEP 2: Access **grant funding**, up to $250K with no local cost share, to support additional clean energy projects

Dedicated and knowledgeable local coordinators are available to assist communities as they implement high-impact actions i.e. free on-demand technical support, decision support, step-by-step guidance, case studies, model ordinances, RFPs, etc.

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10 High-Impact Actions

1. Benchmarking
2. Clean Energy Upgrades
3. LED Street Lights
4. Clean Fleets
5. Solarize
6. Unified Solar Permit
7. Energy Code Enforcement Training
8. Climate Smart Communities Certification
9. Community Choice Aggregation
10. Energize NY Finance

Clean Energy Upgrades

- Clean Energy Upgrades are energy efficiency and renewable energy projects in municipal buildings and facilities.
- By replacing outdated equipment with new smart and efficient technology, municipalities are well positioned to save energy and money over time.
- State programs can help get these projects accomplished with no or low up-front cost while generating net savings to your bottom line.
- Everything from municipal headquarters to public works facilities, fire stations, police precincts, parks facilities, and even water treatment plants are good candidates for upgrades.

Requirements

Demonstrate completion of the Clean Energy Upgrades action by submitting the following documentation:

- Submit an EPA Portfolio Manager benchmarking report including energy use information for each municipal building that is owned or occupied by the applying jurisdiction.
- Submit documentation that demonstrates a minimum 10 percent reduction in greenhouse gas emissions against the baseline.
- Submit a complete Clean Energy Upgrades Calculator, available in the Clean Energy Upgrades toolkit at www.nyserda.ny.gov/cec.
- Up to half of the required reduction in greenhouse gas emissions may be achieved with renewable energy sources.
- The upgrades must have been substantially complete after January 1, 2014.

Examples of Clean Energy Upgrades

Lighting Upgrades

- Interior
- Exterior

Building HVAC

- Controls / Building Management Systems
- Motors and VSDs
- Boiler and chiller plant upgrades

Building Envelope

- Doors and windows
- Insulation

Domestic water heating systems

Water and Waste Water Facilities

- Motors and Variable Frequency Drives (VFDs)
- Controls
- Digester Gas Systems

Renewable Energy Projects

- Solar photovoltaic (PV)
- Geothermal Heat Pumps
- Wind Turbines

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Renewable Energy Projects

51 kW PV Array – Town of Dewitt, NY

- Up to 50% of required GHG reductions may be achieved with renewable energy sources
- Solar photovoltaic (PV), wind energy, geothermal, premium-efficiency wood pellets, or anaerobic digester gas projects
- Renewable energy attributes or credits certified by Green-e

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EPA ENERGY STAR Portfolio Manager

Management Tool

Offers a platform to:

- Assess whole building energy and water consumption
- Track changes in energy, water, greenhouse gas emissions, and cost over time
- Track green power purchase
- Share/report data with others
- Create custom reports
- Apply for ENERGY STAR certification

Metrics Calculator

Provides key performance metrics to integrate into a strategic management plan

- Energy consumption (source, site, weather normalized)
- Water consumption (indoor, outdoor)
- Greenhouse gas emissions (indirect, direct, total, avoided)
- ENERGY STAR 1-to-100 score (available for many building types)

→ ***Accessible in a free, online secure platform: www.energystar.gov/benchmark***

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Clean Energy Upgrades Calculator

Used to determine the percentage reduction in greenhouse gas emission from clean energy upgrades across a portfolio of municipal buildings.

- Enter GHG emissions of all municipal buildings for the baseline year obtained from ENERGY STAR Portfolio Manager.
- List all energy efficiency and renewable energy projects that were substantially complete after January 2014.
- Enter the Annual Energy Savings of each measure as documented in an ASHRAE Energy Audit or an approved pre-and-post engineering study.
- Automatically calculate the percentage reduction in greenhouse gas emissions.

Project Approaches

NYPA Energy Services

The New York Power Authority (NYPA) provides turn-key energy efficiency upgrades to municipal buildings of qualifying jurisdictions. Working closely with your team, NYPA and their contractors handle every aspect of design and construction. NYPA offers low-interest rate financing and projects can typically be accomplished with no or low up-front cost while generating net savings to your bottom line.

DASNY Construction Services

The Dormitory Authority of the State of New York (DASNY) offers design and construction services on a complete management or services-as-needed basis for municipal projects.

Energy Performance Contract (EPC)

Energy performance contracts can also be used to procure energy savings and facility improvements with no or low up-front capital costs.

In-House Resources

Local governments may procure and install equipment using in-house resources.

NYPA Energy Services Program

- NYPA is the nation's largest state public power organization, producing clean and low cost electricity.
- In addition, it provides energy services to eligible government and non-profit entities.
- NYPA's Energy Project Implementation team focuses on managing the design, bidding, and building of energy projects across the State.
- NYPA serves as a trusted energy partner, offering impartial and expert strategies to simplify the procurement process, ensure on-time results, and achieve cost savings and environmental improvements for its customers.
- NYPA has a proven track record of project implementation success: completing 2,164 energy projects at 5,653 buildings and facilities throughout New York.

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Energy Performance Contract (EPC)

Step 1: Issue an Request for Proposals (RFP) and select vendor

Step 2: Kickoff meeting with scope discussion

Step 3: Conduct Investment Grade Energy Audit

Step 4: Execute the Energy Services Agreement

Step 5: Complete final design

Step 6: Construction

Step 7: Measure and verify savings

Step 8: Ongoing operation and maintenance (O&M)

Power Purchase Agreement (PPA)

- Typically used for renewable energy projects like Solar PV.
- Similar to a lease agreement, except payments are based on the energy produced by the PV installation
- No initial capital outlay or project development cost for owner
- PPA contains the terms of the energy sale including energy price, contract duration, and responsibilities of the parties
- Predictable cost of energy for 15 to 25 years
- Allows municipal entities to benefit from federal tax benefits

Project Snap Shot – Town of Williamson Solar PPA

Town of Williamson, NY Solar Array

- Completed in 2014, the Town of Williamson installed a 7 acre 1.5 MW solar array on a closed landfill to provide 100 percent of the combined electricity needs of all of its municipal facilities.
- The Town paid no money upfront by entering into a 25 year power purchase agreement.
- The project took advantage of “remote net metering” where electricity produced at the solar array is allocated to offset the electrical consumption of town buildings and facilities at other locations.

Results:

- Total project cost was $3.5 million.
- $27,000 in annual electricity cost savings
- Cut the carbon footprint of government operations by 100 percent.

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Project Snap Shot – Town of Dewitt Solar Project

51 kW PV Array – Town of Dewitt, NY

- Completed in 2011, the Town of Dewitt installed a 51kW Solar PV array including approximately 200 solar panels on Dewitt Town Hall.
- The town issued a Request for Proposals. An solar developer was selected to install the project.
- Incentives were provided by NYSERDA and the Dormitory Authority of the State of New York.

Results:

- Total project cost was $260,000.
- $27,000 in annual electricity cost savings
- Cut the carbon footprint of government operations by 11 percent.

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Project Snap Shot – City of Lockport NYPA Project

New Domestic Hot Water System
City of Lockport, NY

- Completed in 2014, the City of Lockport took advantage of the New York Power Authority (NYPA) Energy Services Program to upgrade the energy efficiency of four municipal facilities. NYPA oversaw all aspects of design and construction.
- Upgraded facilities include a municipal building, waste water treatment plant, water filtration plant / maintenance garage, and public works highway garage.
- The project included lighting upgrades in four buildings as well as the replacement of an old and inefficient domestic hot water system with a new premium efficiency unit.

Results:

- Total project cost was $223,000
- $15,900 in annual utility bill savings
- Cut the carbon footprint of government operations by 87 tons

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Tools and Resources

Clean Energy Upgrades Calculator

This calculator must be completed and submitted to earn credit for this action.

EPA ENERGY STAR Portfolio Manager Training

A series of videos and training resources is available at www.energystar.gov/benchmark

NYPA Energy Service Fact Sheet

This is a one-page brochure on NYPA's financing offer for energy efficiency projects.

Energy Performance Contracts for Local Governments - Best Practices Guide

This guide, prepared for the Climate Smart Communities Program, includes a brief overview of Energy Performance Contracts and their benefits, industry standards, and case studies from the Mid Hudson region and elsewhere.

Tools and Resources (cont.)

NYSERDA Water & Wastewater Energy Management Best Practices Handbook

This handbook provides the water and wastewater sectors with guidance on the development of an energy conservation program, implementation of capital and operational improvements to reduce energy consumption, and methods to track performance and assess program effectiveness.

Municipal Solar Procurement Toolkit

This municipal solar procurement toolkit, prepared by NYSERDA's PV Trainers Network, provides step-by-step guidance to municipalities interested in procuring solar, and is supplemented by a sample Request for Proposals and sample Power Purchase Agreement (both of which are provided in Word format to allow for modification) and an Excel-based bid evaluation tool.

Technical Support

Dedicated and knowledgeable local Clean Energy Coordinators are available to help municipal officials implement Clean Energy Upgrades. To access this support, please send an email to cec@nyserda.ny.gov

The Bottom Line

Local government officials that implement Clean Energy Upgrades can expect to:

- ✓ Improve municipal facilities while saving energy costs
- ✓ Complete upgrades with no or low up-front costs
- ✓ Lead by example with energy efficiency and solar

Contact

Communities and Local Government
New York State Energy Research and Development Authority (NYSERDA)
Email: cec@nyserda.ny.gov

www.nyserda.ny.gov/cec

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