Evaluating Distributed Generation Economics (EDGE) Instructions

Welcome | Thank you for using the Smart DG Hub Evaluating Distributed Generation Economics (EDGE) tool. The EDGE was developed in order to help building owners make an informed decision on investing in Community Solar (CS).

What It Does | After following the four simple steps below, the modeling dashboard will show the potential returns on an investment in a CS system in New York City for building owners, site hosts or anchor subscribers.

Know Your Options | Building owners have options as to their participation with a CS installation. For example, building owners may choose to act as only the host of the CS systems, while others may want to be the host *and* subscribe to, or even own the system. The dashboard is designed to assist the building owners making these decisions by showing the financial returns, including the payback period, of the various ways to participate in a CS system.

Building Types | The EDGE dashboard displays estimated data for five building types, including a warehouse and an office building. Each building type has a different energy use profile within the dashboard. Each of the building types makes default assumptions regarding the energy use of the building based on U.S. Department of Energy (DOE) reference buildings. You can also input your own data if you know your building's average annual electricity consumption.

The results shown in this dashboard were modeled using [Elevate's Community Solar Pro-Forma tool](). This work was authored by Sustainable CUNY under Subcontract No 2020-10343 as part of the Solar Energy Innovation Network, a collaborative research effort administered by the National Renewable Energy Laboratory under Contract No. DE-AC36-08GO28308 funded by the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy Solar Energy Technologies Office. The views expressed herein do not necessarily represent the views of Alliance for Sustainable Energy, LLC, the DOE, or the U.S. Government.

Instructions

In the blue **Model Inputs** box:

1. Select your **Building type-** *If your building type is not listed, select an option that most closely resembles the size and energy use of your building.*

   a. *Optional: If you know your building's average annual electricity use (kWh/year), you can input that data in "(Optional) Bldg. kWh/year". Doing so will override your "Building type" selection as this is presumed to be more accurate data.*

2. Select **System Size (kW)-** *Desired **System Size** is generally limited by building roof size. Sustainable CUNY's [NY Solar Map](#) can be utilized for a preliminary estimate of roof size and system capacity by simply inserting the building address into the "Find Your Solar Potential" input box.*

3. Select **CS Use-Case-***The [CS use-case](#) outlines the various business models of a CS installation, including ownership of the asset, as well as the benefits and responsibilities. This selection allows a building owner to explore the possibilities as well as the associated financial benefits.*

4. Under the **Include NYC PTA*** *dropdown, select whether you are eligible for the New York City Property Tax Abatement (PTA).*

Results

Based on your selections in the blue box, the below will automatically populate.

The orange **Estimated Square Footage** box is independent of the *Building Type*, but it is directly related to the selected *System Size* and indicates the estimated square footage of roof needed to generate the power in question.

The green **Building Energy Summary** reflects energy used for a particular building category and other factors. These factors include the *Building Share* which in this model is assumed to be the maximum of the kWh generated by the CS system available to the Anchor Subscriber. Under NY State law this maximum is 40% of what is generated. The

*Estimated building energy offse*t is based on a formula that takes into account *Building Type* as well as <u>System Size</u>.

The yellow **Financial Results Summary** shows the breakdown of the costs, savings, incentives, and revenues. Factors that influence the return on investment include the financial incentives offered at the city, state, and federal levels – and your eligibility to realize the available incentives and tax credits. The return on your investment in the CS system is expressed as the *Simple Payback Period (years)***.** For example, your investment might be recovered within five years.

The results are also shown graphically in the two figures. The *Cumulative Cash* flow displays the financial outcome of this investment; for example as an Anchor Subscriber you might save thousands of dollars a year. The lower ring graph shows the breakdown of revenue sources based on the CS Use-Case you selected..

EDGE Glossary and Assumptions

Building type

The types of buildings on which CS systems might be installed vary in terms of energy use. The energy data for the various building categories (<u>Building Type</u>) used in this model are representative of *average* buildings of that particular type within a given climate zone. The EDGE dashboard uses building data for climate zone 4A, which is the zone for New York City (and many other parts of the country).. The energy data comes from the <u>U.S. Department of Energy's commercial reference buildings data</u>.

Solar System Cost Data:

The installed solar cost data ($/Watt) were derived from Lawrence Berkeley National Lab's *<u>Tracking the Sun</u>* dataset of distributed PV installations across the country. The cost data were limited to only include projects installed in the New York City region in the year 2019. The values used in the model represent the median installed cost for each of the 6 system size categories.

Solar System Electric Generation Data:

Generation data from the CS project were derived from <u>PV Watts</u>, a tool developed by the National Renewable Energy Laboratory to estimate the energy production of energy of grid-connected photovoltaic (PV) energy systems based on their location. We used New York City as the location for PV Watts.

Electricity Rates and Savings Data:

Data on subscriber electricity rates, bill credit rates, and bill savings percentage were derived from NYC utility data and data from existing CS systems. The model assumes the following:

Anchor subscriber retail rate	$0.19/kWh
Anchor subscriber bill credit rate	$0.184/kWh
Anchor subscriber bill savings percent	15%
General subscriber retail rate	$0.25/kWh
General subscriber bill credit rate	$0.184/kWh
General subscriber bill savings percent	10%

Subscriber Management Cost Data

Subscriber management costs were estimated based on data submitted by several subscriber management firms, including one that specializes in enrolling LMI customers. The accuracy of this information may be affected by the small sample size.

Site Lease Cost Data

Site lease data is based on conversations with NYPA, NYCHA, and local CS developers and will vary depending on the size and complexity of the project.

Federal ITC

According to the U.S. Department of Energy, the "solar investment tax credit (ITC) is a tax credit that can be claimed on federal corporate income taxes for 26% of the cost of a solar photovoltaic (PV) system that is placed in service during the tax year."

See: [Guide to the Federal Investment Tax Credit for Commercial Solar Photovoltaics](#)

New York State

New York State offers a Real Property Tax Exemption on certain energy systems, including solar. New York State property owners are required to file a RP 487 with the local property assessor for this exemption. [Certain municipalities and school districts](#)

have opted out of this exemption, and projects in these jurisdictions will have the value of the solar installation included in your property tax assessment.

The model uses a current value for the NYSERDA NY-Sun MW block grant of $0.30 per watt, which is subject to change once the block has become fully allocated.

See: The NYSERDA - Tax Credit

NYC Property Tax Abatement

Building owners in NYC who place a grid-connected solar energy system into service through **January 1, 2024** are eligible for a four-year Tax Abatement of 5% per year of the installed cost of the system, for a total of up to 20%. Abatements are applied after the NY-Sun Incentive has been deducted, and capped at $62,500 per year or $250,000 total. This tax abatement is spread equally over four years and may not exceed your property tax liability for any given year. Other programs and tax abatements may impact a building's eligibility for a solar PTA. Eligibility and compability with other NYC property tax abatements can be reviewed here.

If you wish to apply for this incentive, paperwork will need to be filled with the NYC Department of Buildings. For more information, visit: NYC DOB Tax Abatement

Accelerated Depreciation (MACRS)

CS/CS+S systems may be eligible for accelerated depreciation for tax purposes under the Modified Accelerated Cost Recovery System (MACRS). For more information on how MACRS may apply to your CS/CS+S system visit SEIA, the IRS Publication 946 of 2020. To determine eligibility, consult your tax professional.

Simple Payback Period (years)

This is the period over which the upfront cost of the investment in the CS system is paid back, or the investment breaks even. There is no discount rate applied to future payment streams for the simple payback calculation.

Net Present Value (NPV)
Net present value (NPV) is a financial metric that is used to calculate the total present value of an investment. We assumed a discount rate of 8% for the NPV calculation.