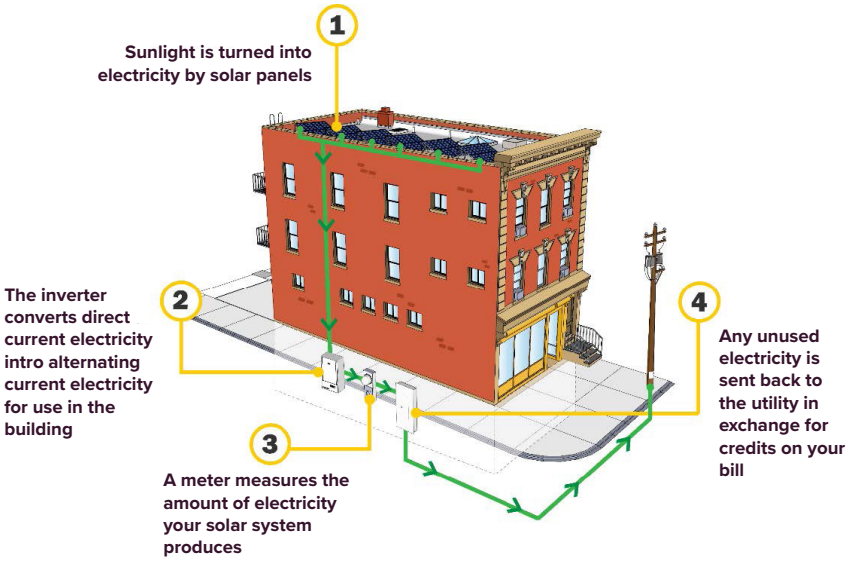
NEW YORK STATE | Homes and Community Renewal

Solar 101

How Solar Works



- Requires direct sunlight, free from buildings and trees.
- Grid-connected for safety reasons - shuts off automatically in a blackout.
- Guarenteed energy production: 25+ years of operating life, best on new roofs.
- Remote monitoring for solar installer and building.

Kilowatts vs Kilowatt Hours

Kilowatt (kW): A solar energy system's capacity is the amount of power that the system could produce in an instant under ideal consitions. System capacity is measured in watts, or kilowatts, like lightbulbs.

Kilowatt Hours (kWh): Over time, solar arrays produce a flow of energy, measured in kilowatt hours. One kilowatt- hour of solar energy offsets the need to purchase one kilowatt-hour from the utility.

Types of Solar Installations

Ballasted Array

HCR's Solar Opportunity Screening Tool default system, unless otherwise noted.

- Low profile.
- Limited roof penetrations.
- Cheaper and easier for low-rise buildings <100 ft.

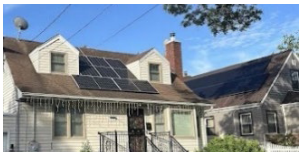
Raised Canopy Array

- Raised at least 9' above roof.
- Can cover entire roof area.
- Most expensive but has co-benefits.

Mechanically Attached Planar Array

- More solar production.
- No inter-row spacing.
- Best for space-constrained roofs.

Pitched-roof Array



- Requires penetration or anchoring into the roof.
- Commonly used in residential solar installations.

Ground-mounted Array

- Requires shade-free open ground space and trenching.
- Installed at optimal tilt and angle and avoids obstructions.
- Easier access for installation purposes and when roof space is not suitable for an array.

Solar Carport

- Provides parking space underneath and potential for direct EV charging.
- Provides shade from the sun & protection from snow or rain.
- Can be designed with optimal orientation and angle.

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Solar Operations and Maintenance

- Solar installer should coordinate with roofer to maintain existing roof warranty.
- Minimal maintenance for solar arrays and inverters.
- Online monitoring allows remote diagnosis of performance issues
- Solar installer should do walkthrough with building staff.
- 5 to 10-year workmanship warranty.
- 25-year panel warranty; 12-year inverter warranty.
- Inverters often replaced around 15 years.

Solar Financials

$/Watt increases when...

- Smaller system
- Mechanically integrated system
- Creative system designs (e.g. Canopy)
- Taller buildings (>10 stories). Extra cost for cranes, scaffolding, etc.
- Prevailing Wage

$/Watt decreases when...

- Larger system
- Ballasted installation
- Competitive and bulk procurement
- Solar-Ready design

Available Solar Incentives

	NYSERDA NY-Sun Incentive *Paid directly to solar installer at project completion as a rebate.*	**Federal Solar Investment Tax Credit*** *Tax credit on Federal Income Taxes, can be taken the year after the system is installed.*	**State Tax Credit** *Tax credit on State Income Taxes, can be taken the year after the system is installed.*
	$1.00/Watt, affordable housing outside NYC. Upstate and Long Island. $1.60-$2/Watt, affordable housing in NYC.	**30% of system costs** *Applicable to hard and soft costs of solar installation.* **+ 10% Bonus for Energy Communities and/or Domestic Content.**	25% of system cost after NY-Sun Nonrefundable but can be carried over for up to 5 years.
OWNER-OCCUPIED CO-OP/CONDO	Eligible for NY-Sun	Likely distributed to shareholders	Must be distributed to shareholders
FOR-PROFIT RENTAL	Eligible for NY-Sun	Solar ITC can be taken	N/A (homeowners only)
NON-PROFIT RENTAL	Eligible for NY-Sun	Tax-exempt organizations may benefit from the Solar ITC through Direct Pay	N/A (homeowners only)

**Federal Investment Tax Credit is 30% + bonuses for certain buildings in low-income census tract or regulated affordable housing projects benefiting low-income tenants. See Solar Incentive Guide on the HCR Solar webpage for more information.*

Questions?

The **NYS Division of Homes and Communities Renewal (HCR)** offers free solar technical assistance to its portfolio of affordable housing projects.

Resources available on HCR's Solar Program webpage:
Solar Evaluation Tool, Solar Incentives Cheat Sheet, HCR Solar Technical Requirements, and Training Videos.

Email hcr.sustainability@hcr.ny.gov for more information.